CHROME COLOURS FOR WOOL

CASSELLA COLOR COMPANY

182 and 184 Front Street,
NEW YORK.

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Providence: 64 Exchange Place.
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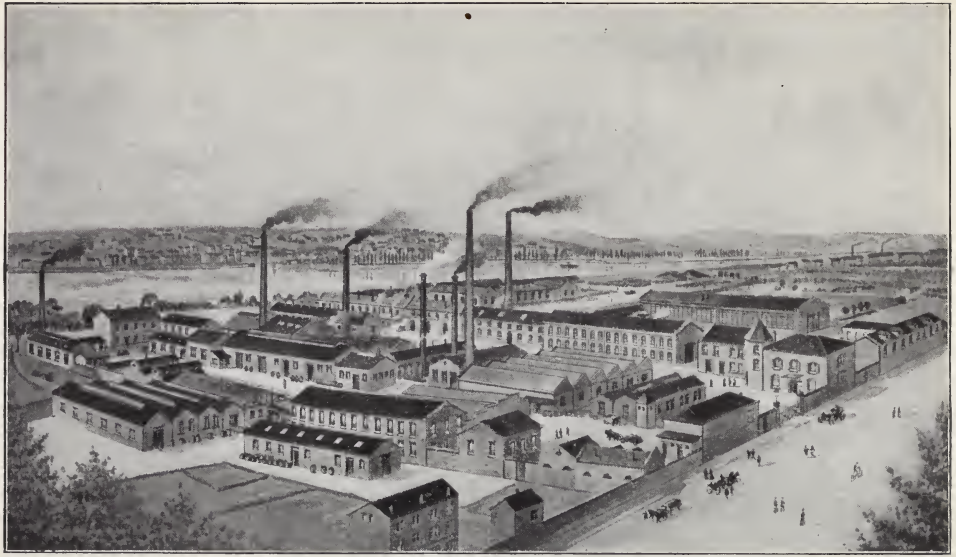

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RUSSIAN ANILINE COLOUR WORKS LEOPOLD CASSELLA & Co, RIGA.

Works at Riga.

LEOPOLD CASSELLA & Co, G. m. b. H., FRANKFORT O. M.

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CHROME COLOURS FOR WOOL

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BOSTON: 39, OLIVER STREET
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ATLANTA: 47 NORTH PRYOR STREET
MONTREAL, CANADA, 59 WILLIAM STREET

1910

PUBLISHED BY CASSELLA COLOR COMPANY, NEW YORK.

No. 3157.

FARMLIFE BOOKS
PHILADELPHIA

PREFACE.

Since the publication of our book on "Wool Dyeing" we have brought out a considerable number of Chrome Colours which have proved of excellent service for the production of fast shades on wool. The "Chromate Process" which we have in the meantime introduced and described already in Volume II of our "Manual of Dyeing" having gained immensely in importance, we have thought it well to go carefully again into the subject of producing fast colours on wool, and in the present work on the

Chrome Colours for Wool

we are now presenting a full description of our most important dyestuffs for dyeing fast shades on wool together with a synopsis of the methods of their application and their special properties. This volume also contains details regarding the production of the different shades on various kinds of material.

Like our earlier publications, this work has been prepared with the greatest care on the basis of practical experience, and we trust that it will prove equally useful.

NEW YORK, January 1910.

CASSELLA COLOR COMPANY.

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Chrome Colours for Wool.

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Chrome Colours for Wool.

The Chrome Colours used for dyeing fast shades on wool are fixed with chrome according to one or other of the following three methods:

a) The older **Method of Dyeing on Chromed Wool.**

The wool is first mordanted with chrome, the Chrome Colours being then dyed on the mordanted wool.

b) The **After-Chroming Process.**

The wool is first dyed with Chrome Colours, which are then fixed with bichrome.

c) The **Chromate Process.**

The wool is dyed straightaway with the bichrome added to the dyebath.

In the tables on page 12 and following pages will be found particulars of the suitability of the individual dyestuffs for these three methods of fixing.

Dyestuffs for Dyeing Chromed Wool.

Anthracene Yellow C Powder and Paste

* Anthracene Chromate Brown EB, WS, WG

Anthracene Acid Brown B

* Anthracene Chrome Blue RRW extra Powder and Paste

* Anthracene Chrome Blue BW extra Powder and Paste

Anthracene Acid Blue RR Powder and Paste

Alizarine Brilliant Green G, SE

Anthracene Chromate Green KFF extra.

The products marked with an asterisk (*) are best dissolved by mixing with half their weight of ammonia and adding hot water to this mixture.

The following products are likewise suited for dyeing chromed wool, and are especially well adapted for pale and medium shades; when dyeing deep shades it is well to after-chrome them, subsequent to dyeing on chromed wool, in order to ensure best fastness to alkalies and milling.

Anthracene Yellow BN, RN, R, GG

Anthracene Acid Brown G, R, N

Anthracene Chrome Brown D, DW, DWN, SWN

Anthracene Chromate Brown ER, 3G

Anthracene Chromate Grey G

Diamine Fast Red F

Anthracene Chrome Red A, G

Anthracene Chromate Violet XB

Anthracene Chrome Violet B

Anthracene Chrome Blue R, B, BB, G, F, FR

Anthracene Acid Blue EB, ER

Anthracene Blue Black BE

Anthracene Blue Black C

Anthracene Acid Black DSF

Anthracene Chrome Black PPS extra.

When dyeing in polished copper vessels or machines, the dyebath heated to about 50° C. (120 deg. F.) is first charged with 0.5 % sulphocyanide of ammonia (of the weight of the wool), stirred well, and allowed to stand for 20 minutes before adding the dyestuff and acid.

Directions for Dyeing Chromed Wool.

The wool is mordanted at the boil for 1 to 1½ hours with bichromate of potash or bichromate of soda and the addition of one of the customary assistants (tartaric acid, lactoline, lignorosine, etc.) The mordant used most frequently consists of

3 % bichrome and
2,5 % tartar;

for particularly deep shades this is increased to

4 % bichrome and
3 % tartar,

but for pale shades the percentages are to advantage reduced, only

1 % bichrome and
1 % tartar

for instance being used for very pale shades.

After the mordanting, the wool should if possible be rinsed. Carbonised goods are best neutralised before the mordanting, because the results obtained with the bichrome and sulphuric acid mordant are less satisfactory.

The dyeing is done in fresh baths with the addition of

1—3 % acetic acid or
5 % acetate of ammonia * (which should be used especially in the case of very light shades and of material which it is difficult to dye level or to penetrate).

Enter the mordanted and rinsed material at 40—50° C. (105—120 deg. F.), raise in about ½ hour to the boil, and boil for 1¼ to 2 hours; after ¾ to 1 hour's boiling, some acetic acid or formic acid is added, if necessary, in order to exhaust the baths.

For details regarding the subsequent shading of the dyeings see page 8.

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* Acetate of ammonia is prepared by mixing:
10 oz ammonia (0.913 sp. g. or 24 %) and
26¼ oz acetic acid (8° Tw. or 30 %).
This solution should be neutral and should not change blue or red litmus paper to any extent.

Dyestuffs for the After-Chroming Process.

Group A. Products to be dyed with sulphuric acid or acetic acid.

Anthracene Yellow BN, RN, GG
Anthracene Acid Brown G
Anthracene Chrome Brown D, DW, SWN
Anthracene Chrome Red A
* Anthracene Chrome Violet B
* Anthracene Chrome Blue R, B, BB, G, F
Azo Chrome Blue T, TB, AI
* Anthracene Acid Black SR, SA, SBB, SRG
Anthracene Acid Black SAS, SASG, SASB, SASN.

Group B. Products to be dyed with acetic acid.

Anthracene Yellow C Powder and Paste, R
Anthracene Acid Brown R, N, B
Anthracene Chrome Brown DWN
Diamine Fast Red F
Anthracene Chrome Red G
* Anthracene Chrome Blue FR
* Anthracene Acid Blue EB, ER
* Anthracene Blue Black BE
Anthracene Blue Black C
Alizarine Brilliant Green G, SE
Anthracene Chrome Black F, FE, FR
Anthracene Chrome Black 5B, KM, PF extra, PFB extra, PFR extra, PFBB extra
Anthracene Chrome Black PPN extra, PPC extra
* Anthracene Chrome Black P extra, PR extra, PPS extra
Anthracene Acid Black ST
Anthracene Acid Black DSN, DSF, DSFB, DNG
Anthracene Chromate Brown EB, ER, WS, WG, 3G
and all the products enumerated under Group A.

* When dyeing the products marked with an asterisk (*) in bright polished copper vessels or machines, the bath heated to 50° C. (120 deg. F.) is first charged with ½% sulphocyanide of ammonia (of the weight of the wool), stirred well, and left standing for 20 minutes before adding Glauber's salt, acid and dyestuff.

Directions for Dyeing by the After-Chroming Process.

Dyeing with Sulphuric Acid.

Charge the bath with 1—4 % sulphuric acid, according to the depth of shade to be dyed, and with the requisite quantities of dyestuff; enter the well scoured wool at about 50° C. (120 deg. F.), raise in 20 to 30 minutes to the boil, and continue boiling for 1 hour. Then cool off, and treat for ¾ hour at the boil with one-half to two-thirds the quantity of bichrome as of dyestuff used.

As a rule, the same quantity of sulphuric acid as of dyestuff is used, but not less than 1 % and not more than 4 %, or for Blacks 5 %; for Anthracene Chrome Brown D and SWN, however, not more than 3 % sulphuric acid should be used.

In the case of Azo Chrome Blue, 1% sulphuric acid is added together with the bichrome, the blue being developed by one hour's boiling.

Dyeing with Acetic Acid.

Charge the bath with 10 % Glauber's salt, 2—3 % acetic acid and the requisite quantities of dyestuff; enter the well scoured wool at 45—50° C. (110—120 deg. F.). raise in 20 to 30 minutes to the boil, and exhaust the bath after about ½ hour's boiling by the gradual addition of 1—4 % sulphuric acid. Then cool off, and chrome for ½ to ¾ hour at the boil with one-half to two-thirds the quantity of bichrome as of dyestuff used.

For Blacks, the dyeing may be started at 70° C. (160 deg. F.) and the bath be brought to the boil at once. Of bichrome, only one-third the weight of dyestuff is as a rule used for chroming black dyeings.

When dyeing in calcareous water, the bath must, in the case of Anthracene Chrome Black F, FE and FR, be charged first with 2 % oxalate of ammonia* before adding the dyestuff and acid.

Regarding the subsequent shading of the dyeings see page 8.

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* Oxalate of ammonia, commercially pure, can be bought or be easily prepared by dissolving 1 lb oxalic acid in 1 gallon of hot water, and neutralising this solution with about 18 oz ammonia of 0.913 sp. gr. The solution should not change either blue or red litmus paper and contains about 1¼ lbs oxalate of ammonia crystals.

Dyestuffs suitable for the Chromate Process.

Anthracene Chromate Brown EB, WS, WG.

The solubility of these brands is improved by mixing the dyestuff with half its weight of ammonia, hot water being then poured over the mixture.

Anthracene Chromate Brown ER, 3G
Anthracene Chromate Grey G
Anthracene Chromate Blue XR, LC, MRB, MGG, LRR
Anthracene Chromate Violet XB
Anthracene Chromate Green B, FF, KFF extra
Anthracene Chromate Yellow GG, M, KL
Anthracene Chromate Red 6R, Y
Anthracene Chromate Black D, STW
Anthracene Blue Black C
Alizarine Brilliant Green G, SE.

Directions for Dyeing by the Chromate Process.

The dyestuffs must be added to the dyebath in a well dissolved state.

Boil up the bath, cool off, add the requisite quantity of bichrome (about half the weight as of dyestuff used), and 3—4% magnesium sulphate in the case of soft water, entering the well scoured material at about 70—75° C. (160—170 deg. F.). Work the goods for some time at this temperature, raise to the boil, and dye boiling for 1½ to 2 hours. In the case of pale and medium shades, the bath is then sufficiently exhausted; for deep shades it is recommended, after one hour's boiling, to gradually add to the bath 1—3% acetic acid, well diluted.

Material which is difficult to dye level (loose wool, etc.) is to advantage dyed with the addition of 3—4 % Universal oil FD or Monopole soap; this addition is likewise useful for yarns which show a tendency to felt.

Dyestuff and bichrome should be dissolved separately, the latter being added to the bath just before entering the goods.

Regarding the subsequent shading see page 8.

Shading Products.

For subsequently shading the colours produced on chromed wool or by the after-chroming or the chromate process, the same Chrome Colours are usually employed which were used for the dyeing proper. This is also the case if the colours have already been fixed or chromed on the fibre. This applies particularly to loose material. The dyebath is first cooled off to some extent, whereupon the dyestuff is added well dissolved and in a diluted form, the bath being brought again gradually to the boil and boiling being continued for 20 to 30 minutes. If larger quantities of the Anthracene Colours (more than one-fourth of the quantity used at first) are employed for the subsequent shading, they should be fixed again with a little bichrome in order to ensure best possible fastness to milling; in the case of smaller quantities, this subsequent chroming may be omitted.

The chromed dyeings may on the other hand also very well be shaded subsequently with Acid Colours possessing good fastness to milling, of which the following may be mentioned:

Brilliant Milling Green B	Formyl Violet, all brands
Formyl Blue B	Milling Yellow O
Brilliant Milling Blue B	Wool Red B.
Tetra Cyanole A	

When shading, the bath should be cooled off slightly before adding the well dissolved dyestuff.

For yarn, and particularly for piece-goods, easily levelling colours are frequently used for the subsequent shading and may be added straightaway to the boiling liquor. The following are the most suitable for this purpose:

Tetra Cyanole V	Acid Yellow AT
Cyanole extra, FF	Orange GG
Cyanole Fast Green G	Azo Orseille BB
Cyanole Green B, 6G	Acid Violet 6BC.

The Application of the Various Methods.

The question as to which of the three methods should be applied in practice must be solved in accordance with the nature of the material to be dyed and the dyeing plant available.

The following remarks may generally serve as a guide in this respect:

Dyeing on Chromed Wool

is generally given the preference for piece-goods, except in the case of Blacks. This method is preferred also for loose wool or yarns when these materials still contain fatty impurities, which are less disturbing when chroming first than they may do if any other process is employed. It is always best however to see that the goods are well scoured before dyeing.

For shoddy goods which are stripped previously with bichrome and acid, dyestuffs which can be dyed on chromed wool are likewise preferred, because the stripping acts simultaneously as mordanting; deep shades are then in most cases advantageously subjected to a slight after-chroming.

This method is likewise given the preference for ready-milled soft or stiff hats, especially when dyeing such mode colours as can be shaded fairly easily on a chrome mordant.

The After-Chroming Method

is generally applied in the dyeing of loose wool, slubbing, yarn, and frequently also for piece-goods, especially when producing black, blue and brown shades, blacks being dyed almost exclusively by this method. Mode shades are in a like manner mostly dyed by this method by reason of the simpler method of working. The same method is as a rule given the preference for dyeing slubbing, worsted yarn, cops, or cheeses in dyeing machines.

For piece-goods, the after-chroming method offers also the advantage of staining cotton effect threads the least.

Shoddy is in most instances dyed by this method, the acid remaining in the goods over from the carbonising process serving at the same time for the dyeing.

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In hat dyeing, the after-chroming method is given the preference for the dyeing of wool hats in the half-milled state (as shapes) and is generally applied for producing blacks on ready-milled and stiffened hats.

The Chromate Process

is simpler still in its application than the after-chroming method and has been principally adopted for the production of the many mode shades as well as for browns and olives. In some of the wool districts this method is applied almost exclusively for producing these shades on worsted yarn, slubbing and piece-goods.

Furthermore, in machine-dyeing this method offers advantages on account of the ease with which the shading is accomplished.

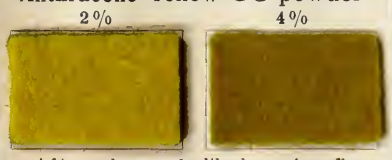
For shoddy, the chromate process only comes into consideration if the goods have not been carbonised; for carbonised material the after-chroming method is the more advantageous.

The chromate process is of especial importance for the dyeing of fur felt hats in the half-milled state (as shapes); and all kinds of mode shades, browns, olives, etc., are consequently produced on such hats by this method.

Dyeings of the Chrome Colours

with a Synopsis of their

Properties and Methods of Application.

Dyestuff	May be dyed			To be		
	on Chromed Wool	by the After-chroming Process	by the Chromate Process	Loose Wool	Slubbing	Yarn
1 **Anthracene Yellow BN** 1,5 % 3 % Dyed by the after-chroming process. On chromed wool somewhat fuller shades are obtained. The shades obtained according to the chromate process are about the same.	Good	Very good	Good	4	4	4
2 **Anthracene Yellow C** powder 1,5 % 3 % Same as Anthracene Yellow BN.	Very good	Very good	Good	4	3	2 Dyeings on chromed wool 3—4
3 **Anthracene Yellow RN** 1,5 % 3 % Same as Anthracene Yellow BN.	Good	Very good	Good	4	4	4
4 **Anthracene Yellow GG** powder  2 % 4 % After-chromed with chromium fluoride. With bichrome duller shades of the same eminent fastness are obtained. On chromed wool the shades are fuller, and by the chromate process they are rather duller.	Good	Very good	Good	4	4	4

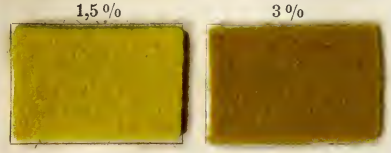
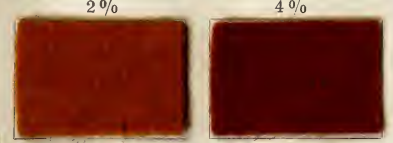
* 4 = Very good. 3 = Good

For full particulars of fastness to light and milling, and other properties,

used for *								Remarks
Piece-Goods	Cloth with Effect Threads of Cotton	Cloth with Effect Threads of Silk	Shoddy	Knitting Yarn	Machine Dyeing	Hats	Vigoureux Printing	
4	4	4	4	4	4	4	4	*Anthracene Yellow BN belongs to the most important yellow Chrome Colours because it levels excellently when dyed by any of these methods and can consequently be used under any circumstances as a yellowing agent.*
2	1	1	4	2	3	1	3	*Anthracene Yellow C Powder is superior to BN in its fastness to milling and light, and may be used wherever the very highest requirements are made with regard to fastness. It also serves as the best substitute for fustic, particularly on chromed wool, and is much faster to light and acids than fustic.* *Anthracene Yellow C is also delivered "in Paste" form.* *Anthracene Yellow R is another, more orange, brand.*
4	4	3–4	4	4	4	4	4	*Behaves similarly to Anthracene Yellow BN, and is somewhat redder and faster to light than this product.*
4	2	3–4 After-chromed with chromium fluoride 1	1	3–4	4	4	4	*This is the most greenish of the Anthracene Yellow brands, possessing eminent fastness to light. It is particularly valuable for military cloths.* *On account of its good fastness to light it is used also according to the chromate process as a shading dyestuff for pale tones.*

2 = Satisfactory. 1 = Unsatisfactory.

see our book on "Wool Dyeing", pages 66–75, and the Supplements thereto.

Dyestuff	May be dyed			To be		
	on chromed Wool	by the After-chroming Process	by the Chromate Process	Loose Wool	Slubbing	Yarn
5 **Anthracene Chromate Yellow KL** 1,5 % 3 % Dyed by the chromate process. Somewhat heavier shades are obtained on chromed wool. Very good shades are also obtained when afterchromed.	Good	Very good	Very good	4	4	4
6 **Anthracene Chromate Yellow M** 1,5 % 3 % Dyed by the chromate process.	Very good	Good	Very good	4	3	2 Dyeings on chromed wool 3—4
7 **Anthracene Chromate Yellow GG** 1,5 % 3 %  Dyed by the chromate process.	Good	Very good	Very good	4	4	4
8 **Anthracene Chromate Brown 3G pat.** 2 % 4 %  Dyed by the chromate process. On chromed wool, and by the afterchroming process, dyelngs of the same shade are obtained.	Good	Good	Very good	3	3	4

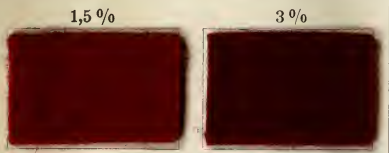
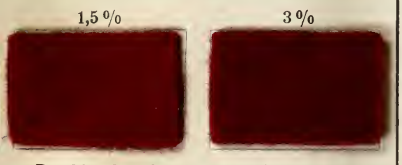
* 4 = Very good. 3 = Good.

For full particulars of fastness to light and milling, and other properties,

used for *								Remarks
Piece-Goods	Cloth with Effect Threads of Cotton	Cloth with Effect Threads of Silk	Shoddy	Knitting Yarn	Machine Dyeing	Hats	Vigoureux Printing	
4	4	4	4	4	4	4	4	*Anthracene Chromate Yellow KL is one of the most important types of yellow, because of its good levelling quality. It is excellently adapted for use as a yellow shading product.*
2	1	1	4	2	3	1	3	*Anthracene Chromate Yellow M is superior to Anthracene Chromate Yellow KL in fastness to light and milling, and will answer very severe demands for fastness.*
4	2	3–4	1	3–4	4	4	4	*Anthracene Chromate Yellow GG possesses excellent fastness to light and for this reason is very often used in the production of mode shades. Its level dyeing properties are also very good.*
3	2	1	4	4	3–4	3–4	2–3	*This is a yellow brown, dyeing very level, and used particularly for the production of leather and similar shades by the chromate process.*

2 = Satisfactory. 1 = Unsatisfactory.

see our book on "Wool Dyeing", pages 66–75, and the Supplements thereto.

Dyestuff	May be dyed on Chromed Wool	May be dyed by the After-chroming Process	May be dyed by the Chromate Process	To be Loose Wool	To be Slubbing	To be Yarn
9 **Anthracene Chrome Red A** 1,5 % 3 % Dyed by the after-chroming process. On chromed wool somewhat more yellowish red dyeings are produced.	Can be dyed to good advantage in light and medium shades; in deep shades the dyeings must be after-chromed	Very good	Not suitable	4	4	4
10 **Anthracene Chrome Red G pat.** 1,5 % 3 %  Dyed by the after-chroming process. On chromed wool and by the chromate process somewhat paler shades are produced.	Same as Anthracene Chrome Red A	Very good; in contradistinction to the "A" brand it cannot be dyed with the addition of large quantities of acid	Good	4	3	3
11 **Diamine Fast Red F** 1,5 % 3 %  Dyed by the after-chroming process. On chromed wool and by the chromate process the same shades are obtained.	Good	Very good	Good	4	3—4	4
12 **Anthracene Chrome Violet B** 1,5 % 3 % Dyed by the after-chroming method. Somewhat paler shades of the same tone are obtained when dyeing by the chromate process.	Same as Anthracene Chrome Red A	Very good	Good	4	4	4

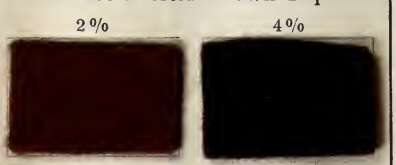
* 4 = Very good. 3 = Good.

For full particulars of fastness to light and milling, and other properties,

used for *								Remarks
Piece-Goods	Cloth with Effect of Cotton	Threads of Silk	Shoddy	Knitting Yarn	Machine Dyeing	Hats	Vigoureux Printing	
4	4	4	4	4	4	4	4	*Anthracene Chrome Red A, in addition to excellent fastness to light and milling, etc., possesses very good levelling properties, and is consequently suited for producing both reddish browns and prunes, and also mode shades.*
3	2—3	3—4	3	3—4	3	1	3	*Yields bright red shades of good fastness, and is particularly well suited for dyeing madder shades. It is also employed as a shading product both for the after-chroming process, and on chromed wool.*
3—4	1	1	3—4	4	3—4	3	4	*Diamine Fast Red F is, among the red dyestuffs, one of the fastest to light. It produces, when fixed with bichrome or chromium fluoride, dyeings of perfect fastness to milling. It is used for producing fast Madder shades on any kind of material, and in several countries red military cloths are dyed therewith. Its principal advantage over Alizarine and Madder Reds is its superior fastness to carbonising and rubbing.*
4	4	3—4	4	4	4	4	3 4	*Anthracene Chrome Violet B combines with good levelling power very good fastness to milling and light. It is used chiefly for producing purple and prune shades, and as a shading product. It is likewise excellently suited for dyeing piece-goods with silk effects, as it leaves the latter unstained.*

2 = Satisfactory. 1 = Unsatisfactory.

See our book on "Wool Dyeing", pages 66—75, and the Supplements thereto.

Dyestuff	May be dyed			To be		
	on Chromed Wool	by the After-chroming Process	by the Chromate Process	Loose Wool	Slubbing	Yarn
13 **Anthracene Acid Brown G pat.** 2% 4% Dyed by the after-chroming process. The same shades are obtained by the chromate process.	Good only in light and medium shades; for deep shades a slight after-chroming is necessary in order to better fix the colour.	Very good	Good	3–4	4	4
14 **Anthracene Acid Brown R pat.** 2% 4% Dyed by the after-chroming process. The same shades, only slightly lighter, are obtained by the chromate process.	Same as Anthracene Acid Brown G	Very good	Good	2–3	2–3	3–4
15 **Anthracene Acid Brown N pat.** 2% 4% Same as Anthracene Acid Brown R.	Same as Anthracene Acid Brown G	Very good	Good	4	3	3–4
16 **Anthracene Acid Brown B pat.** 2% 4%  Dyed by the after-chroming process. On chromed wool somewhat fuller shades are obtained, and by the chromate process slightly lighter shades.	Good	Very good	Good	4	3	3

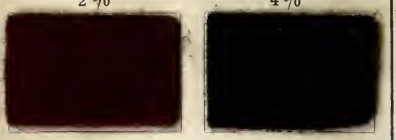
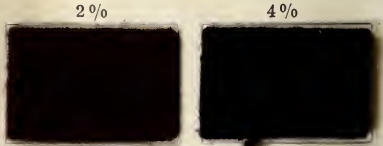
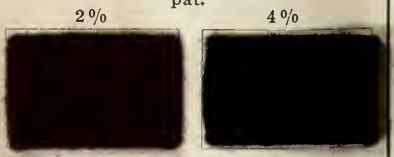
* 4 = Very good. 3 = Good.

For full particulars of fastness to light and milling, and other properties,

used for *								Remarks
Piece-Goods	Cloth with Effect Threads of Cotton	Cloth with Effect Threads of Silk	Shoddy	Knitting Yarn	Machine Dyeing	Hats	Vigoureux Printing	
4	1	1	4	4	4	4	3	*Anthracene Acid Brown G is the most yellowish brown of the Anthracene Acid Colour group. It is distinguished for its good levelling property and is used for the production of yellowish brown dyeings and other mode shades, and particularly also for shading military grey, so-called "field grey".*
4	2	1	1	2	2 – 3	1	2	*Yields dyeings of very good fastness to light. It is used only for articles which are not subjected to severe alkaline milling.* *The product has proved particularly useful in piece-dyeing for producing brown shades fast to light and milling.*
3	2	1	3 – 4	3	3	1	3	*These two products belong to the best covering of the cheaper dyestuffs. Their dyeings are exceedingly fast to milling, but in fastness to light they are not equal to the Anthracene Chrome Browns.* *They are used largely also for the dyeing of shoddy, particularly the "B" brand. Their dyeings are very fast to steaming and carbonising.*
2	2	1	3 – 4	3	3	1	3 – 4	

2 = Satisfactory. 1 = Unsatisfactory.

see our book on "Wool Dyeing", pages 66—75, and the Supplements thereto.

Dyestuff	May be dyed			To be		
	on Chromed Wool	by the After-chroming Process	by the Chromate Process	Loose Wool	Slubbing	Yarn
17 **Anthracene Chrome Brown D pat.** 2 % 4 %  Dyed by the after-chroming process.	Good only in light shades; in medium and deep shades a slight after-chroming is necessary in order to better fix the colour.	Very good	Not suitable	4	4	4
18 **Anthracene Chrome Brown DW** 2 % 4 % Dyed by the after-chroming process.	Same as Anthracene Chrome Brown D	Very good	Not suitable	4	3—4	3—4
19 **Anthracene Chrome Brown DWN** 2 % 4 %  Dyed by the after-chroming process. The same shades are obtained on chromed wool and by the chromate process.	May be dyed in light and medium shades on chromed wool; in deep shades, after-chroming is necessary for the better fixation of the colour.	Very good	Not suitable	4	3—4	3—4
20 **Anthracene Chrome Brown SWN pat.** 2 % 4 %  Dyed by the after-chroming process. The same dyeings are obtained on chromed wool.	Same as Anthracene Chrome Brown DWN	Very good	Not suitable	4	4	4

* 4 = Very good. 3 = Good.

For full particulars of fastness to light and milling, and other properties,

used for *								Remarks
Piece-Goods	Cloth with Effect Threads of Cotton	Cloth with Effect Threads of Silk	Shoddy	Knitting Yarn	Machine Dyeing	Hats	Vigoureux Printing	
4	2—3	1	4	4	4	4	4	*Anthracene Chrome Brown D occupies the same position among the Chrome Browns as Anthracene Yellow BN among the Chrome Yellows, being the typical best levelling product. It is used most extensively on loose wool, slubbing, yarn and piece-goods, for brown shades and especially also for the many brownish mode shades, for "Field Grey", etc. The fastness to milling and light is excellent.*
3	2	1	4	3	3—4	3	3	*Anthracene Chrome Brown DW comes in the first place into consideration for producing brown shades; more recently it is frequently substituted by the "DWN" brand.*
3	2	1	4	3	3—4	3—4	4	*Does not possess quite the same excellent levelling property as Anthracene Chrome Brown D, but may still be used very well for producing medium and deep mode shades. Dyed with acetic acid and after-chromed, its dyeings possess excellent fastness to milling, light, and steaming.*
4	3	2	4	4	4	3	4	*Besides its good levelling property, Anthracene Chrome Brown SWN offers the special advantage of a very fine shade. Dyed direct, it yields deep brown shades with a yellow tone so frequently in demand nowadays. It may at the same time be used for the production of mode shades also in machines. It is best dyed with acetic acid, and after-chromed. The dyeings possess the same fastness to milling and light as those of Anthracene Chrome Brown D.*

= Satisfactory. 1 = Unsatisfactory.

ee our book on "Wool Dyeing", pages 66—75, and the Supplements thereto.

Dyestuff	May be dyed			To be		
	on Chromed Wool	by the After-chroming Process	by the Chromate Process	Loose Wool	Slubbing	Yarn
21 **Anthracene Chromate Brown EB** 1% 2% Dyed by the chromate process. When dyed on chromed wool, somewhat deeper shades are obtained, whereas, when dyed by the after-chroming process, the same shades are obtained as by the chromate process.	Very good	Very good	Very good	4	4	4
22 **Anthracene Chromate Brown ER** 1% 2% Dyed by the chromate process. On chromed wool, slightly deeper shades and by the after-chroming process, slightly lighter shades are obtained.	Good	Good	Very good	4	4	4
23 **Anthracene Chromate Brown WS pat.** 2% 4% Same as Anthracene Chromate Brown EB.	Very good	Very good	Very good	4	4	4
24 **Anthracene Chromate Brown WG pat.** 2% 4% Same as Anthracene Chromate Brown EB.	Very good	Very good	Very good	4	4	4

* 4 = Very good. 3 = Good.

For full particulars of fastness to light and milling, and other properties,

used for *								Remarks
Piece-Goods	Cloth with Effect Threads of Cotton	Cloth with Effect Threads of Silk	Shoddy	Knitting Yarn	Machine Dyeing	Hats	Vigoureux Printing	
4	1	1	3	4	4	3—4	4	*These four dyestuffs belong to the same group, and are distinguished for their property of being fixable by any of the three methods of chroming. They may equally well be dyed on chromed wool and by the after-chroming process, and yield especially good results when dyed by the chromate process. Dyeings produced by any of the three methods are of excellent fastness to light and milling.*
4	2	1	3	4	4	3	3	*Anthracene Chromate Brown EB and ER yield the deepest brown shades and possess approximately double the tinctorial power of the other products.*
4	2	1	3	4	4	3—4	4	*Anthracene Chromate Brown ER dyes a redder and even more covered shade than the EB brand.*
4	2	1	3	4	4	3—4	4	*Anthracene Chromate Brown WS yields a much brighter brown, and the WG brand likewise a very bright brown with a yellow cast.*
								The Anthracene Chromate Browns belong to the browns of best fastness to light, and are not surpassed in either fastness to steaming or acids by any other brown Chrome Colour.

2 = Satisfactory. 1 = Unsatisfactory.

see our book on "Wool Dyeing", pages 66—75, and the Supplements thereto.

Dyestuff	May be dyed			To be		
	on Chromed Wool	by the After-chroming Process	by the Chromate Process	Loose Wool	Slubbing	Yarn
25 **Anthracene Chrome Blue R pat.** 2% 4% Dyed by the after-chroming method. On chromed wool it ylelds dyeings of a somewhat brighter, by the chromate process dyelngs of a somewhat paler, shade.	Very good in light and medium shades; deep shades must be fixed with a little bichrome.	Very good	Good	3—4	3—4	4
26 **Anthracene Chrome Blue B pat.** 2% 4% Same as Anthracene Chrome Blue R.	Same as Anthracene Chrome Blue R	Very good	Good	3—4	3—4	4
27 **Anthracene Chrome Blue BB pat.** 2% 4% Dyed by the after-chroming method. Dyeings on chromed wool are of a slightly brighter shade.	Same as Anthracene Chrome Blue R	Very good	Not suitable	4	4	4
28 **Anthracene Chrome Blue G pat.** 2% 4% Same as Anthracene Chrome Blue BB.	Same as Anthracene Chrome Blue R	Very good	Not suitable	4	4	4

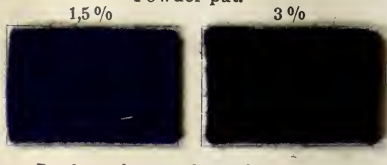
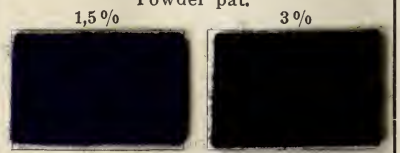
* 4 = Very good. 3 = Goo

For full particulars of fastness to light and milling, and other properties

Used for *								Remarks
Piece-Goods	Cloth with Effect Threads of Cotton	Cloth with Effect Threads of Silk	Shoddy	Knitting Yarn	Machine Dyeing	Hats	Vigoureux Printing	
4	4	4	4	4	4	3	4	*Is chiefly dyed by the after-chroming method and is the blue the most largely used by this method of dyeing. It is especially distinguished by its deep shade and eminent fastness to milling and light. On piece-goods Anthracene Chrome Blue R is likewise dyed on chromed wool, offering in this case the advantage of leaving cotton and silk effects perfectly unstained.*
4	4	2–3	4	4	4	3	4	*Possesses the same properties and commands the same scope of application as Anthracene Chrome Blue R. Its dyeings are somewhat brighter and do not appear reddish in artificial light.*
4	3–4	1–2	4	4	4	4	4	*Anthracene Chrome Blue BB belongs likewise to the group of the Anthracene Chrome Blue R. Besides for blues, it is used frequently for dyeing olives, browns and mode shades.*
4	2–3	1	4	4	4	4	4	*Is the most greenish of the Anthracene Chrome Blue series and is distinguished by very good levelling power. It is used extensively for producing blue, greenish blue and mode shades. On loose wool and yarn it is principally dyed by the after-chroming method, but on piece-goods frequently also on chromed wool, levelling very well on mordanted wool.*

2 = Satisfactory. 1 = Unsatisfactory.

See our book on "Wool Dyeing", pages 66–75, and the Supplements thereto.

Dyestuff	May be dyed on Chromed Wool	May be dyed by the After-chroming Process	May be dyed by the Chromate Process	To be Loose Wool	To be Slubbing	To be Yarn
29 **Anthracene Chrome Blue F pat.** 2 % 4 % Dyed by the after-chroming method. On chromed wool somewhat brighter dyeings are obtained.	May be used for the direct dyeing of light shades; in the case of medium and dark shades the dyeings must be fixed subsequently with bichrome	Very good	Not suitable	4	4	4
30 **Anthracene Chrome Blue FR** 2 % 4 % Same as Anthracene Chrome Blue F.	Same as Anthracene Chrome Blue F	Very good	Not suitable	3 – 4	4	4
31 **Anthracene Chrome Blue BW extra** Powder pat. 1,5 % 3 %  Dyed on chromed wool.	Very good	Not suitable	Not very well suited	4	4	4
32 **Anthracene Chrome Blue RRW extra** Powder pat. 1,5 % 3 %  Dyed on chromed wool. By the chromate process somewhat paler shades are obtained.	Very good	Not suitable	Good	4	4	4

* 4 = Very good. 3 = Good.

For full particulars of fastness to light and milling, and other properties,

used for *								Remarks
Piece-Goods	Cloth with Effect Threads of Cotton	Cloth with Effect Threads of Silk	Shoddy	Knitting Yarn	Machine Dyeing	Hats	Vigoureux Printing	
4	4	4	4	4	4	4	4	*Of all the after-chroming blues, Anthracene Chrome Blue F yields the brightest shade, being noted for eminent fastness to light and milling and for very good levelling properties. It is used very extensively especially for dyeing slubbing and piece-goods. It does not stain effect threads.*
4	4	2	4	4	4	3	3	*Has a somewhat more purplish shade than Anthracene Chrome Blue F and is therefore especially well suited for producing reddish blue and dark blue shades.*
4	2	1	2	3	4	1	3–4	*These two products differ in so far from our other Anthracene Chrome Blues as they are used for dyeing on chromed wool only. On previously mordanted loose wool, hanks, or piece-goods, they yield intense blue shades of eminent fastness to milling and light.*
4	2	1	2	3	4	1	3–4	*Both products are marketed both in powder and paste form. For dissolving the powder products, it is recommended to mix the dyestuff first with some ammonia (about half the weight of the dyestuff) and then to pour hot water over this mixture.*

2 = Satisfactory. 1 = Unsatisfactory.

see our book on "Wool Dyeing", pages 66–75, and the Supplements thereto.

Dyestuff	May be dyed			To be		
	on Chromed Wool	by the After-chroming Process	by the Chromate Process	Loose Wool	Slubbing	Yarn
33 **Anthracene Acid Blue ER pat.** 2 % 4 % Dyed by the after-chroming method. On chromed wool somewhat brighter dyeings are obtained.	Can be dyed to good advantage in light and medium shades: in deep shades the dyeings must be subsequently fixed with some bichrome	Very good	Not suitable	4	4	4
34 **Anthracene Acid Blue EB pat.** 2 % 4 % Same as Anthracene Acid Blue ER.	Same as Anthracene Acid Blue ER	Very good	Not suitable	4	4	4
35 **Anthracene Blue Black BE pat.** 1,5 % 3 % Dyed by the after-chroming method. Dyeings produced on chromed wool are a little more bluish.	Good	Very good	Not suitable	4	4	4
36 **Anthracene Blue Black C pat.** 0,75 % 3 % Dyed by the after-chroming method. On chromed wool, somewhat more bluish shades, by the chromate process the same, shades are obtained.	Fixed very well on chromed wool in light and medium shades	Very good	Very good	4	4	4

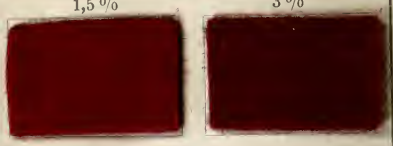
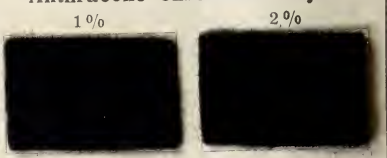
* 4 = Very good. 3 = Good

For full particulars of fastness to light and milling, and other properties

used for *								
Piece-Goods	Cloth with Effect Threads of Cotton	Cloth with Effect Threads of Silk	Shoddy	Knitting Yarn	Machine Dyeing	Hats	Vigoureux Printing	Remarks
4	3—4	1	4	4	4	3	4	*Anthracene Acid Blue ER and EB serve in the first place for the production of blue dyeings of good fastness to milling and light, and especially for medium and deep blue Indigo shades. The dyeings of both products offer the advantage of yielding a nitric acid test similar to Indigo.*
4	3—4	1	4	4	4	3	4	*The EB brand yields a slightly more bluish, the ER brand a somewhat more purplish, shade; the two products may be used in combination with each other.*
4	3—4	2	4	4	4	3	4	*Not quite equal to Anthracene Blue Black C in point of levelling, but very serviceable for shading purposes, especially owing to its eminent fastness to light, even in pale shades. Besides for mode and grey shades, it is frequently also used in combination with other black dyestuffs for producing bluish black shades.*
4	2	1	4	4	4	4	4	*Anthracene Blue Black C possesses excellent levelling properties, and is used to advantage as a shading product for all kinds of mode and other dull shades on loose wool, piece-goods, slubbing, or yarn, and also in machine-dyeing. The dyestuff is not sensitive to copper and may also be dyed in iron vessels.*

2 = Satisfactory. 1 = Unsatisfactory.

See our book on "Wool Dyeing", pages 66—75, and the Supplements thereto.

Dyestuff	May be dyed on Chromed Wool	May be dyed by the After-chroming Process	May be dyed by the Chromate Process	To be Loose Wool	To be Slubbing	To be Yarn
37 **Anthracene Chromate Red Y** 1,5 % 3 %  Dyed by the chromate process.	Good for light shades. Dark shades should be after-chromed	Good	Very good	4	3	3
38 **Anthracene Chromate Violet XB** 1,5 % 3 % Dyed by the chromate process. The after-chroming method yields the same shades.	Good in light and medium shades. In deep shades a light after-chroming is required	Good	Very good	4	4	4
39 **Anthracene Chromate Blue XR pat.** 2 % 4 % Dyed by the chromate process. After-chromed dyeings show the same shade; dyeings on chromed wool are somewhat brighter.	Same as Anthracene Chromate Violet XB	Good	Very good	4	4	4
40 **Anthracene Chromate Grey G** 1 % 2 %  Dyed by the chromate process. On chromed wool and by the after-chroming method more purplish shades are obtained.	Good	Good	Very good	4	4	4

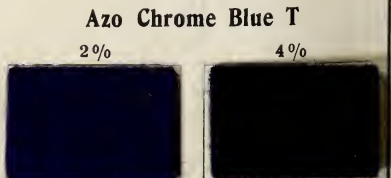
* 4 = Very good. 3 = Good.

For full particulars of fastness to light and milling, and other properties,

used for *								Remarks
Piece-Goods	Cloth with Effect Threads of Cotton	Cloth with Effect Threads of Silk	Shoddy	Knitting Yarn	Machine Dyeing	Hats	Vigoureux-Printing	
3	2—3	3—4	3	3—4	3	1	3	*This product produces brilliant shades of red of good fastness, and is used especially for the production of madder red shades. It is also used as a shading product by the after-chroming process as well as on a chrome bottom and for chromate process dyeings.*
4	3	3—4	3	4	4	3—4	2—3	*Anthracene Chromate Violet XB is especially serviceable when dyed by the chromate process and is used chiefly for the production of violet and prune shades, and for shading purposes. Silk effects are not stained by this product.*
4	3—4	3	4	4	4	2	3	*This blue is of very good fastness to milling, etc., and excels in fastness to light. It is used by the chromate process as a shading and saddening product and also with Anthracene Blue Black C, and is especially suited for deep shades, because of its low cost.* *When dyeing in soft or distilled water, the bath should be charged with 3—4 % magnesium sulphate, which effects a better exhaustion and a deeper shade.*
4	4	3—4	3	4	4	3	4	*Anthracene Chromate Grey G is exceedingly fast to light and also very good in other properties of fastness. Because of its good levelling quality it serves both for greys and especially as a saddening product for all mode colours, olives and browns.* *When dyeing in bright copper vessels by the after-chroming method, the bath should first be charged with some sulphocyanide of ammonia before adding the dyestuff.*

2 = Satisfactory. 1 = Unsatisfactory.

see our book on "Wool Dyeing", pages 66—75, and the Supplements thereto.

Dyestuff	May be dyed			To be		
	on Chromed Wool	by the After-chroming Process	by the Chromate Process	Loose Wool	Slubbing	Yarn
41 **Anthracene Chromate Green B pat.** 3 % 4 % Dyed by the chromate process. Dyeings produced on chromed wool or by the after-chroming method turn out a trace more bluish.	Good in light and medium shades. In deep shades a light after-chroming is required	Good	Very good	2	3—4	3
42 **Anthracene Chromate Green KFF extra pat.** 1,5 % 3 % Same as Anthracene Chromate Green B.	Good	Very good	Very good	4	4	4
43 **Alizarine Brilliant Green G pat.** 1,5 % 3 % Dyed by the after-chroming process. The same shades are obtained on chromed wool and when dyeing by the chromate process.	Very good	Very good	Very good	4	4	4
44 **Azo Chrome Blue T** 2 % 4 %  Dyed by the after-chroming process.	Not suitable	Very good	Not suitable	3	3	3—4

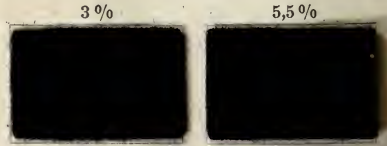
* 4 = Very good. 3 = Good.

For full particulars of fastness to light and milling, and other properties,

used for *								Remarks
Piece-Goods	Cloth with Effect Threads of Cotton	Cloth with Effect Threads of Silk	Shoddy	Knitting Yarn	Machine Dyeing	Hats	Vigoureux Printing	
4	4	4	4	4	3—4	1	3—4	*Anthracene Chromate Green B possesses very good fastness to light and is excellently suited for the production of green, olive and mode shades. It is especially used for piece-dyeing and for slubbing, but is less suitable for dyeing loose wool and yarn.* *When dyed in copper vessels by the after-chroming method, the bath should first be charged with some sulphocyanide of ammonia.*
4	4	3	3	4	4	4	4	*This brand is still faster to light than Anthracene Chromate Green B and also superior in levelling quality. Therefore it may be used on any kind of wool material both for the production of greens, and as shading product for olives and mode colours.* *When dyed in copper vessels by the after-chroming method, the bath should first be charged with some sulphocyanide of ammonia.*
4	4	3—4	3	3	4	4	4	*Alizarine Brilliant Green G possesses eminent fastness to light and alkalies, and is excellent for dyeing self-shades and also as a shading product for greenish mode colours, olives, etc.* *Alizarine Brilliant Green SE possesses the same properties, but yields somewhat more covered shades.*
4	4	3	3	3—4	4	2	2	*Particularly well suited for cheap, fast blues on piece-goods; it leaves cotton effects unstained and silk shots nearly so. For heavy milling it is not applicable, but it is very useful for dyeing yarn, etc. fast to washing or to light milling.* *Azo Chrome Blue TB is somewhat faster to washing and milling. The greener "AI" brand also serves for modes, browns and olives on pieces, and particularly well for producing solid shades on goods containing a shoddy filling.*

= Satisfactory. 1 = Unsatisfactory.

ee our book on "Wool Dyeing", pages 66—75, and the Supplements thereto.

Dyestuff	May be dyed			To be		
	on Chromed Wool	by the After-chroming Process	by the Chromate Process	Loose Wool	Slubbing	Yarn
45 **Anthracene Chrome Black F pat.** 3 % 6 % Dyed by the after-chroming method.	Not suitable	Very good	Not suitable	4	4	4
46 **Anthracene Chrome Black 5B pat.** 3 % 6 % Dyed by the after-chroming method.	Not suitable	Very good	Not suitable	4	4	4
47 **Anthracene Acid Black DSF** 3 % 5,5 % Dyed by the after-chroming process. On chromed wool and by the chromate process the same shade is obtained.	Chromed wool is dyed quite well; deep shades should be slightly after-chromed	Very good	Not suitable	4	4	4
48 **Anthracene Acid Black DSFB pat.** 3 % 5,5 %  Dyed by the after-chroming process.	Not suitable	Very good	Not suitable	4	4	4

* 4 = Very good. 3 = Good.

For full particulars of fastness to light and milling, and other properties,

used for *								Remarks
Piece-Goods	Cloth with Effect Threads of Cotton	Cloth with Effect Threads of Silk	Shoddy	Knitting Yarn	Machine Dyeing	Hats	Vigoureux Printing	
4	2—3	1	3—4	4	4	3	4	*Very generally admitted for military cloth. Its brilliant, bluish black shade cannot be produced exactly with any other black. Excellently suited for machine-dyeing, does not foam, and may be dyed in copper or iron vessels. It possesses good fastness to stoving and is suited for cross-dyeing. Calcareous water should not be used or should be corrected with oxalate of ammonia.* *Anthracene Chrome Black FE differs from the F brand only by its more covered shade.*
4	3	1	4	4	4	4	4	*Yields a bluish black with a greenish cast and is chiefly used in combination with other blacks and for producing dark blue and greenish black shades; in properties of fastness it stands on a level with Anthracene Chrome Black F, surpassing the latter in fastness to potting, thus allowing of application even if high demands are made regarding fastness to potting.*
3—4	2—3	1—2	4	4	3—4	3	1—2	*Is used to a large extent for the dyeing of loose wool and yarn, and less extensively for piece-goods. The product is distinguished by good fastness to milling and light, and ranks with the best dyestuffs also in point of fastness to cross-dyeing.* *Anthracene Acid Black DSN is another equally important brand, yielding somewhat more covered dyeings.*
4	2—3	1—2	4	4	4	3	2	*In its behaviour the product resembles Anthracene Acid Black DSF, but it is superior to the latter in fastness to steaming.* *Anthracene Acid Black DNG belongs to the same group and yields a considerably more bluish black.* *Anthracene Acid Black SW is used particularly for the dyeing of loose wool, yielding more covered blacks than the above-named brands.*

2 = Satisfactory. 1 = Unsatisfactory.

see our book on "Wool Dyeing", pages 66—75, and the Supplements thereto.

Dyestuff	May be dyed			To be		
	on Chromed Wool	by the After-chroming Process	by the Chromate Process	Loose Wool	Slubbing	Yarn
49 **Anthracene Chrome Black P extra** pat. 3,75 % 7,5 % Dyed by the after-chroming method.	Not suitable	Very good	Not suitable	4	4	4
50 **Anthracene Chrome Black PF extra** pat. 3,75 % 7,5 % Dyed by the after-chroming method. On chromed wool, the same shade will be obtained.	Only suitable for light and medium shades	Very good	Not suitable	4	4	4
51 **Anthracene Chrome Black PFB extra** pat. 3,75 % 7,5 % Same as Anthracene Chrome Black PF extra.	Same as PF extra	Very good	Not suitable	4	4	4
52 **Anthracene Chrome Black PR extra** pat. 3,75 % 7,5 % Dyed by the after-chroming method.	Not suitable	Very good	Not suitable	4	4	4

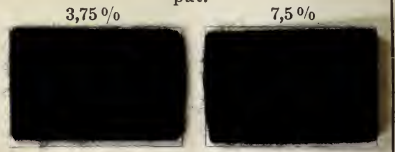
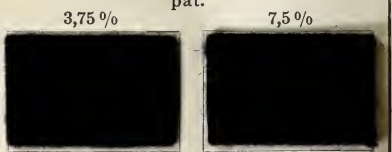
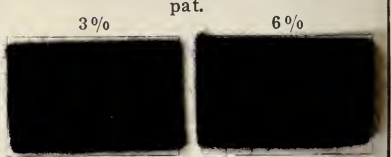
* 4 = Very good. 3 = Good.

For full particulars of fastness to light and milling, and other properties,

used for *								Remarks
Piece-Goods	Cloth with Effect Threads of Cotton	Cloth with Effect Threads of Silk	Shoddy	Knitting Yarn	Machine Dyeing	Hats	Vigoureux-Printing	
3	3	2	4	4	4	2	4	*The products of the Anthracene Chrome Black "P" series have been adopted extensively, chiefly for producing dyeings fast to milling and potting on loose wool, yarns and slubbing. Such dyeings possess also very good fastness to acids, and are therefore used for goods to be cross-dyed.* *Anthracene Chrome Black P extra is likewise used extensively for Vigoureux Printing.*
3–4	3	1	4	4	4	2	2	*Possesses the same properties as the "P extra" brand, differing from the same only by its somewhat more covered and deeper shade. Its scope of application is the same; for Vigoureux Printing, "P extra" is given the preference.*
4	3	1	4	4	4	2	2	*Anthracene Chrome Black PFB extra possesses a somewhat more purplish shade than P extra, surpassing the latter in point of fastness to light.* *A further brand of the same group is Anthracene Chrome Black PFBB extra which possesses a somewhat more bluish shade.*
3	3	1	4	4	4	2	3	*Behaves in properties of fastness exactly like Anthracene Chrome Black P extra, compared with which it is of a more reddish shade, being on this account especially well suited for producing exceptionally deep blacks.*

2 = Satisfactory. 1 = Unsatisfactory.

see our book on "Wool Dyeing", pages 66–75, and the Supplements thereto.

Dyestuff	May be dyed			To be		
	on Chromed Wool	by the After-chroming Process	by the Chromate Process	Loose Wool	Slubbing	Yarn
53 **Anthracene Chrome Black PPC extra** pat. 3,75 % 7,5 % Dyed by the after-chroming method.	Not suitable	Very good	Not suitable	4	4	4
54 **Anthracene Chrome Black PPN extra** pat. 3,75 % 7,5 %  Dyed by the after-chroming method.	Not suitable	Very good	Not suitable	3 – 4	4	4
55 **Anthracene Chrome Black PPS extra** pat. 3,75 % 7,5 %  Dyed by the after-chroming method; on chromed wool the same shade is obtained.	The colour is fixed sufficiently well in light and medium shades	Very good	Not suitable	4	4	4
56 **Anthracene Chrome Black KM** pat. 3 % 6 %  Dyed by the after-chroming method.	Not suitable	Very good	Not suitable	4	4	4

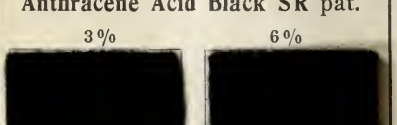
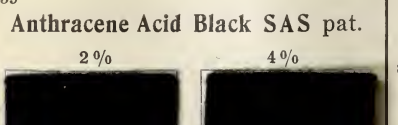
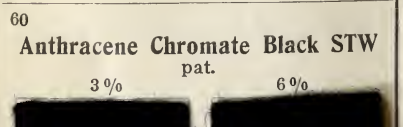
* 4 = Very good. 3 = Good.

For full particulars of fastness to light and milling, and other properties,

used for *								Remarks
Piece-Goods	Cloth with Effect Threads of Cotton	Silk	Shoddy	Knitting Yarn	Machine Dyeing	Hats	Vigoureux Printing	
4	3–4	2	4	4	4	3	2	*Belongs to a new group of dyestuffs fast to milling and potting, and is distinguished for specially good levelling properties in addition to its eminent fastness to light. It is used not only for blacks and bluish blacks, but also for shading medium and dark mode colours. It yields excellent results in machine-dyeing.*
4	4	2–3	4	4	4	3—4	4	*Both products in properties of fastness behave like Anthracene Chrome Black PPC extra, their shades being slightly brighter and bluer.*
4	4	2–3	4	4	4	3	3	*Both brands are especially well suited also for piece-dyeing in the production of dyeings fast to milling and perspiration; they leave cotton effects completely unstained.*
4	3	1	4	4	4	3	2	*Yields a full, bloomy black with a bluish cast, of very good fastness to light, milling, and steaming which also answers most requirements for fastness to potting; it is used chiefly for dyeing slubbing, loose wool and yarn, but is likewise very well suited for piece-dyeing.* *Somewhat more purplish blacks are obtained with Anthracene Chrome Black KR which possesses the same properties, whereas the KBB brand deserves the preference for producing bluish blacks.*

2 = Satisfactory. 1 = Unsatisfactory.

see our book on "Wool Dyeing", pages 66–75, and the Supplements thereto.

Dyestuff	May be dyed			To b		
	on Chromed Wool	by the After-chroming Process	by the Chromate Process	Loose Wool	Slub-bing	Yarn
57 **Anthracene Acid Black ST pat.** 3 % 6 % Dyed by the after-chroming method.	Not very well suited	Very good	Not suitable	2–3	2–3	3
58 **Anthracene Acid Black SR pat.** 3 % 6 %  Dyed by the after-chroming process.	Not suitable	Very good	Not suitable	3–4	4	4
59 **Anthracene Acid Black SAS pat.** 2 % 4 %  Dyed by the after-chroming process.	Not suitable	Very good	Not suitable	3	3	3
60 **Anthracene Chromate Black STW pat.** 3 % 6 %  Dyed by the chromate process. After-chromed dyeings are slightly more bluish.	Not suitable	Good	Very good	3	3	3–

* 4 = Very good. 3 = Goo

For full particulars of fastness to light and milling and other properti

used for *								Remarks
Piece-goods	Cloth with Effect Threads of Cotton	Cloth with Effect Threads of Silk	Shoddy	Knitting Yarn	Machine Dyeing	Hats	Vigoureux-Printing	
4	4	4	2	3	4	3–4	3	*Anthracene Acid Black ST is chiefly used for piece-dyeing, yielding bluish black dyeings of good fastness to light, alkalies, steaming, and perspiration. It offers the advantage of leaving both cotton and silk effect threads completely unstained.* *A somewhat more reddish and deeper brand is Anthracene Acid Black SRT.*
4	3–4	2	3–4	4	4	3	4	*The product is dyed straight with sulphuric acid, differing in this respect from the other blacks. It levels very well, possesses very good fastness to milling and light, and is used in the first place for dyeing slubbing, yarn and piece-goods.* *Anthracene Acid Black SR yields a bluish black; Anthracene Acid Black SRG dyes more greenish blacks, whereas Anthracene Acid Black SRT, as above stated, yields more covered blacks.*
3	3	1	4	3	4	2	3	*Yields a very bright, greenish black. Special brand for dyeing coloured carbonised shoddy. It penetrates exceedingly well and may be dyed in a very strongly acid bath; carbonised goods need not be neutralised. Is good to milling, and very cheap owing to its simple and reliable method of dyeing.* *The brands SASG, SASN and SASB are also useful for dyeing carbonised, coloured shoddy.* *Anthracene Chrome Black 1465J is another important brand, fast to milling, for dyeing shoddy.*
4	4	4	3	3–4	4	3	3	*Anthracene Chromate Black STW is especially well adapted for dyeing piece-goods containing silk effects. Because of its excellent fastness to light and its good levelling quality it may be used both for blacks and greys, and as a shading product for mode colours, browns etc.*

2 = Satisfactory. 1 = Unsatisfactory.

see our book on "Wool Dyeing", pages 66–75, and the Supplements thereto.

Dyestuffs

for the

Production of the Various Shades

for

A. Loose Wool (Pages 45–54)
B. Slubbing and Yarn (Pages 55–65)
C. Military and other Uniform Cloths (Pages 66–76)
D. Piece-Dyeing (Pages 77–90)
E. Machine-Dyeing (Pages 91–98)
F. Shoddy (Pages 99–109)
G. Vigoureux Printing (Pages 110–117)
H. Hat Dyeing (Pages 118–126).

A. Dyestuffs for Loose Wool.

Grey and Mode Shades.*

a) **For very light Shades, best Levelling:**

1. After-Chroming Process:

Combinations of

Anthracene Yellow BN, RN, GG
Anthracene Chrome Brown D, SWN
Anthracene Blue Black C
Anthracene Chrome Blue G
Anthracene Chrome Red A
Anthracene Chrome Violet B.

2. Chromate Process:

Combinations of

Anthracene Chromate Yellow GG, KL
Anthracene Chromate Brown EB, ER, 3G
Anthracene Chromate Grey G
Anthracene Chromate Black D
Anthracene Blue Black C.

3. Chromed Wool:

Combinations of

Anthracene Yellow BN
Anthracene Brown D
Anthracene Chromate Brown EB
Anthracene Blue Black C
Anthracene Chrome Red A.

b) **For Medium and Deep Shades:**

1. After-Chroming Process:

Combinations of the dyestuffs given under a) 1. and

Anthracene Yellow C
Anthracene Chrome Brown DWN, DW
Anthracene Chromate Brown EB
Anthracene Blue Black BE
Anthracene Chrome Blue BB, F, R
Anthracene Chrome Black PPC extra.

* For dyeing directions see pages 3, 5 and 7.

2. Chromate Process:

Combinations of the dyestuffs given under a) 2. and
Anthracene Chromate Yellow GG, M
Anthracene Chromate Brown WS, WG
Anthracene Chromate Red Y
Anthracene Chromate Violet XB
Anthracene Chromate Blue XR
Anthracene Chromate Green KFF extra
saddened if necessary with
Anthracene Chromate Black STW.

3. Chromed Wool:

Combinations of the dyestuffs given under a) 3. and
Anthracene Yellow C
Anthracene Chrome Red G
Anthracene Chromate Brown WS, WG
Anthracene Blue Black BE
Anthracene Chrome Blue G, BB
Anthracene Chromate Green KFF extra
saddened if necessary with
Anthracene Acid Black DSF.

c) Fast to Potting and Cross-Dyeing:

After-Chroming Process:

Combinations of
Anthracene Yellow C
Anthracene Chrome Brown D, SWN
Anthracene Chrome Red A
Anthracene Blue Black BE
Anthracene Chrome Blue G, BB
Anthracene Chrome Black PPC extra.

d) Dyestuffs for Shading Purposes:

Alizarine Brilliant Green G, SE, Brilliant Milling Green B, Tetra Cyanole A, Wool Red B.

Brown and Olive.*

a) With best possible Fastness to Milling and Light:

1. After-Chroming Process:

Combinations of

Anthracene Chrome Brown D, DWN, SWN, DW
Anthracene Chromate Brown EB, WS, WG
Anthracene Yellow BN, RN, C, R, GG
Anthracene Chrome Red A, G
Anthracene Blue Black C, BE
Anthracene Chrome Blue BB, G, F, R
Anthracene Chrome Violet B
Alizarine Brilliant Green G, SE
Anthracene Chromate Green KFF extra
Anthracene Chrome Black PPC extra.

2. Chromate Process:

Combinations of

Anthracene Chromate Brown EB, ER, WS, WG, 3G
Anthracene Chromate Yellow M, GG
Anthracene Chromate Red Y
Anthracene Blue Black C
Anthracene Chromate Grey G
Anthracene Chromate Blue XR
Anthracene Chromate Violet XB
Anthracene Chromate Green KFF extra
Alizarine Brilliant Green G, SE.

3. Chromed Wool:

Combinations of

Anthracene Chromate Brown EB, WS, WG
Anthracene Yellow C
Anthracene Blue Black C, BE
Anthracene Chrome Blue G
Alizarine Brilliant Green G, SE
Anthracene Chromate Green KFF extra

for saddening:

Anthracene Acid Black DSF.

* For dyeing directions see pages 3, 5 and 7.

b) **Cheaper Method of Production:**

1. After-Chroming Process:

Combinations of

Anthracene Acid Brown N, B
Anthracene Chrome Brown DWN
Anthracene Chromate Brown EB, WG, WS
Anthracene Yellow C
Anthracene Chrome Black PPC extra.

2. Chromate Process:

Anthracene Chromate Brown EB, ER, WG, WS
Anthracene Chromate Yellow M
Anthracene Chromate Blue XR
Anthracene Chromate Grey G

for saddening:

Anthracene Chromate Black STW.

c) **Fast to Potting and Cross-Dyeing:**

After-Chroming Process:

Anthracene Chrome Brown D, SWN
Anthracene Chrome Red A
Anthracene Yellow C
Anthracene Blue Black BE
Anthracene Chrome Blue G
Anthracene Chrome Black PPC extra.

d) **Dyestuffs for Shading Purposes:**

Brilliant Milling Green B, Tetra Cyanole A, Wool Red B.

Red, Orange and Claret.*

a) For Madder Shades on Military Cloths:

To be dyed with subsequent chroming:

Diamine Fast Red F
shaded with
Anthracene Yellow C
Anthracene Chrome Blue F
or
Anthracene Chrome Red G.

b) For other Reds or Oranges and Clarets with best possible Fastness:

1. After-Chroming Process:

Red:	Diamine Fast Red F Anthracene Chrome Red G Anthracene Chrome Red A
Orange:	The above dyestuffs shaded with Anthracene Yellow RN, BN, C, R
Claret:	The above dyestuffs shaded with Anthracene Chrome Violet B.

2. Chromate Process:

Red:	Anthracene Chromate Red Y Anthracene Chromate Red 6R
Orange:	The above dyestuffs shaded with Anthracene Chromate Yellow GG, M
Claret:	The above dyestuffs shaded with Anthracene Chromate Violet XB.

3. Chromed Wool:

The same dyestuffs as indicated for the After-Chroming Process.

* For dyeing directions see pages 3, 5 and 7.

c) For bright Reds for Shots, Stripes, etc.:

1. To be dyed in an acid bath: **

With good fastness to milling next to wool and cotton and fast to stoving:

Milling Red G
Rhodamine B (for pink shades)
shaded if necessary with
Milling Yellow O
or
Formyl Violet S4B.

With good fastness to milling next to wool:

Wool Red B
shaded if necessary as indicated above.

2. To be dyed in a neutral bath:**

With good fastness to milling next to wool:

Diamine Scarlet B, 3B†
Diamine Purpurine B†, V†, 3B†
Diamine Bordeaux B, S†
shaded if necessary with
Milling Yellow O† or
Diamine Yellow CP.†

The dyestuffs marked † are fast to stoving.

d) Fast to Potting and Cross-Dyeing:

After-Chroming Process:

Diamine Fast Red F
Anthracene Chrome Red A
Anthracene Yellow C.

e) Dyestuffs for Shading Purposes:

Anthracene Yellow, all brands, Formyl Violet S4B, Anthracene Chrome Violet B, Anthracene Chromate Violet XB, Anthracene Acid Blue RR (the latter only on chromed wool).

** For dyeing directions see our "Manual of Dyeing", Vol. II (No. 2939), pages 6 and 13.

Yellow and Green.*

a) With best possible Fastness to Milling and Light:

1. After-Chroming Process:

Yellow: Anthracene Yellow GG (fixed with chromium fluoride)
Anthracene Yellow BN, RN, C, R.

Green: Alizarine Brilliant Green G, SE
Anthracene Chromate Green KFF extra
or
Combinations of
Anthracene Chrome Blue G, BB, F
Anthracene Blue Black C
Anthracene Yellow BN, C, GG
Alizarine Brilliant Green G, SE
Anthracene Chromate Green KFF extra
for saddening:
Anthracene Chrome Black 5B, PPC extra.

2. Chromate Process:

Yellow: Anthracene Chromate Yellow M, GG, KL

Green: Anthracene Chromate Green KFF extra
Alizarine Brilliant Green G, SE
or
Combinations of
Anthracene Chromate Green KFF extra
Anthracene Chromate Blue XR
Anthracene Blue Black C
Anthracene Chromate Yellow GG
Alizarine Brilliant Green G, SE
for saddening:
Anthracene Chromate Black STW.

* For dyeing directions see pages 3, 5 and 7.

3. Chromed Wool:

Yellow: Anthracene Yellow BN, RN, C, R

Green: Alizarine Brilliant Green G, SE
Anthracene Chromate Green KFF extra
or
Combinations of
Anthracene Chrome Blue G, BW extra
Anthracene Yellow C, BN, GG
Alizarine Brilliant Green G, SE
Anthracene Chromate Green KFF extra
for saddening:
Anthracene Acid Black DSF.

b) For particularly bright Shades:

To be dyed in an acid bath:**

Yellow: Milling Yellow O

Green: Alizarine Brilliant Green G
Brilliant Milling Green B
Tetra Cyanole A
in combination if necessary with
Milling Yellow O.

c) Fast to Potting and Cross-Dyeing:

After-Chroming Process:

Yellow: Anthracene Yellow C

Green:
Combinations of
Anthracene Yellow C
Anthracene Chrome Blue G, BB, F
Anthracene Chrome Black 5B, PPC extra.

d) Dyestuffs for Shading Purposes:

Brilliant Milling Green B, Tetra Cyanole A, Formyl Blue B.

Dyeings of Brilliant Milling Green B are turned a little paler by a severe alkaline treatment, the original shade returning however on souring off subsequently.

** For dyeing directions see our "Manual of Dyeing", Vol. II (No. 2939) page 6.

Blue and Violet.*

a) With best possible Fastness to Milling and Light:

1. After-Chroming Process:

Anthracene Chrome Blue F, FR, BB, G, R, B
Anthracene Acid Blue EB, ER
Anthracene Chrome Violet B.

2. Chromed Wool:

Anthracene Chrome Blue RRW extra, BW extra, [G, R
Anthracene Acid Blue RR.

3. Chromate Process:

Anthracene Chromate Blue XR, MGG, MR
Anthracene Chrome Blue RRW extra
Anthracene Chromate Violet XB.

b) Cheaper Method of Production:

1. After-Chroming Process:

Combinations of
Anthracene Blue Black BE
Anthracene Chrome Black PPC extra, PBB, F
Anthracene Acid Black DSF, DNG, SBB
and
Brilliant Milling Blue B
Tetra Cyanole A
Formyl Blue B
Formyl Violet S4B.

2. To be dyed direct with the addition of acetate of ammonia: **

Alphanol Blue BR extra, 5RN, GN.

c) For particularly brilliant light Blues and Violets:

To be dyed in an acid bath: **

Brilliant Milling Blue B
Formyl Blue B
Tetra Cyanole A
Formyl Violet S4B—10B.

d) Fast to Potting and Cross-Dyeing:

To be dyed with subsequent chroming:
Anthracene Chrome Blue F, G, BB.

e) Dyestuffs for Shading Purposes:

Brilliant Milling Blue B, Formyl Blue B, Tetra Cyanole A, Brilliant Milling Green B, Formyl Violet S4B—10B, Wool Red B.

* For dyeing directions see pages 3, 5 and 7.

** For dyeing directions see our "Manual of Dyeing", Vol II (No. 2939), pages 6 and 8.

Black.*

a) With best possible Fastness to Milling, Potting and Light:

After-Chroming Process:

Anthracene Chrome Black PPC extra, PPN extra, PPS extra, P extra, PF extra, PFB extra, PFR extra, PR extra, PFBB extra, 5B.

The "PP" brands are eminently fast to light.

b) With very good Fastness to Milling and Light:

After-Chroming Process:

Anthracene Chrome Black F, FE, FR, KM, PBB
Anthracene Acid Black DSF, DSN, DSFB, DNG.

c) For Goods to be Cross-Dyed:

After-Chroming Process:

Anthracene Chrome Black P extra, PF extra, PFB extra
Anthracene Chrome Black F, FE, 5B
Anthracene Acid Black DSF, DSN.

d) For light Milling (with good Fastness to Washing).

To be dyed in an acid bath:**

Alphanol Black R, BG, 3B, 3BN.

e) Dyestuffs for Shading Purposes:

Anthracene Yellow, all brands, Anthracene Acid Brown G, Anthracene Chromate Green KFF extra, Alizarine Brilliant Green G, SE, Anthracene Chrome Red A, Anthracene Chrome Violet B, Anthracene Chrome Blue F, Anthracene Acid Blue EB, ER;

Brilliant Milling Blue B, Formyl Violet S4B—10B, Brilliant Milling Green B, Milling Yellow O, Wool Red B (the last-mentioned dyestuffs also for acid-dyed Blacks).

* For dyeing directions see pages 3, 5 and 7.

** For dyeing directions see our "Manual of Dyeing", Vol. II (No. 2939), page 6.

B. Dyestuffs for Slubbing and Yarn.

Grey and Mode Shades.*

a) For very light Shades, best Levelling:

1. After-Chroming Process:

Combinations of

Anthracene Yellow BN, RN, GG
Anthracene Chrome Brown D, SWN
Anthracene Blue Black C
Anthracene Chrome Blue G
Anthracene Chrome Red A
Anthracene Chrome Violet B.

2. Chromate Process:

Combinations of

Anthracene Chromate Yellow GG, M
Anthracene Chromate Grey G
Anthracene Chromate Brown EB, ER
Anthracene Chromate Black D
Anthracene Blue Black C
Anthracene Chromate Blue MGG
Anthracene Chromate Violet XB.

3. Chromed Wool:

Combinations of

Anthracene Yellow BN
Anthracene Chrome Brown D
Anthracene Chromate Brown EB
Anthracene Blue Black C
Anthracene Chrome Red A.

b) For medium and deep Shades:

1. After-Chroming Process:

Combinations of the dyestuffs given under a) 1 and

Anthracene Chrome Brown DWN, DW
Anthracene Chromate Brown EB
Anthracene Blue Black BE
Anthracene Chrome Blue BB, F, R
Anthracene Chrome Black PPC extra.

* For dyeing directions see pages 3, 5 and 7.

2. Chromate Process:

Combinations of the dyestuffs given under a) 2 and
Anthracene Chromate Yellow M
Anthracene Chromate Brown WS, WG, 3G
Anthracene Chromate Red Y
Anthracene Chromate Blue XR, MGG
Anthracene Chromate Green KFF extra
saddened if necessary with
Anthracene Chromate Black STW.

3. Chromed Wool:

Combinations of the dyestuffs given under a) 3 and
Anthracene Yellow C
Anthracene Chrome Red G
Anthracene Chromate Brown WS, WG
Anthracene Blue Black BE
Anthracene Chrome Blue G
Anthracene Chromate Green KFF extra
saddened if necessary with
Anthracene Acid Black DSF.

c) **Fast to Potting and Cross-Dyeing:**

After-Chroming Process:

Combinations of
Anthracene Yellow C
Anthracene Chrome Brown D, SWN
Anthracene Chrome Red A
Anthracene Blue Black BE
Anthracene Chrome Blue G
Anthracene Chrome Black PPC extra.

d) **Dyestuffs for Shading Purposes:**

Alizarine Brilliant Green G, SE, Brilliant Milling Green B, Tetra Cyanole A, Wool Red B.

Brown and Olive.*

a) With best possible Fastness to Milling and Light:

1. After-Chroming Process:

Combinations of

Anthracene Chrome Brown D, DWN, SWN, DW
Anthracene Chromate Brown EB, WS, WG
Anthracene Yellow BN, RN, C, R, GG
Anthracene Chrome Red A, G
Anthracene Blue Black C, BE
Anthracene Chrome Blue BB, G, F, R
Anthracene Chrome Violet B
Alizarine Brilliant Green G, SE
Anthracene Chromate Green KFF extra
Anthracene Chrome Black PPC extra.

2. Chromate Process:

Combinations of

Anthracene Chromate Brown EB, ER, WS, WG, 3G
Anthracene Chromate Yellow GG, M
Anthracene Chromate Red Y
Anthracene Blue Black C
Anthracene Chromate Grey G
Anthracene Chromate Blue XR, MGG
Anthracene Chromate Violet XB
Anthracene Chromate Green KFF extra
Alizarine Brilliant Green G, SE.

3. Chromed Wool:

Combinations of

Anthracene Chromate Brown EB, WS, WG
Anthracene Yellow C
Anthracene Blue Black C, BE
Anthracene Chrome Blue G
Alizarine Brilliant Green G, SE
Anthracene Chromate Green KFF extra

saddened if necessary with

Anthracene Acid Black DSF.

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* For dyeing directions see pages 3, 5 and 7.

b) Cheaper **Method of Production:**

1. After-Chroming Process:

Combinations of

Anthracene Acid Brown G, N, B
Anthracene Chrome Brown DWN
Anthracene Chromate Brown EB, WS, WG
Anthracene Yellow C, R
Anthracene Chrome Black PPC extra.

2. Chromate Process:

Combinations of

Anthracene Chromate Brown EB, ER, WS, WG
Anthracene Chromate Yellow M
Anthracene Chromate Blue XR
Anthracene Chromate Grey G

for saddening:

Anthracene Chromate Black STW.

c) **Fast to Potting and Cross-Dyeing:**

1. After-Chroming Process:

Anthracene Chrome Brown D, SWN
Anthracene Yellow C
Anthracene Chrome Red A
Anthracene Blue Black BE
Anthracene Chrome Blue G
Anthracene Chrome Black PPC extra.

d) **Dyestuffs for Shading Purposes:**

Brilliant Milling Green B, Tetra Cyanole A, Wool Red B, Diamine Fast Red F.

Red, Orange and Claret.*

a) With best possible Fastness to Milling and Light:

1. After-Chroming Process:

Red: Diamine Fast Red F
Anthracene Chrome Red G
Anthracene Chrome Red A

Orange: The above dyestuffs shaded with
Anthracene Yellow RN, BN, C, R

Claret: The above dyestuffs shaded with
Anthracene Chrome Violet B.

2. Chromate Process:

Red: Anthracene Chromate Red Y, 6R

Orange: The above dyestuffs shaded with
Anthracene Chromate Yellow M, KL

Claret: The above dyestuffs shaded with
Anthracene Chromate Violet XB.

3. Chromed Wool:

The same dyestuffs as indicated for the After-Chroming Process.

b) For bright Reds for effects, stripes, etc.:

1. To be dyed in an acid bath:**

With good fastness to milling next to wool and cotton and to stoving:

Milling Red G
Rhodamine B (for pink shades)
shaded if necessary with
Milling Yellow O, or
Formyl Violet S4B.

With good fastness to milling next to wool:

Wool Red B
shaded if necessary as indicated above.

* For dyeing directions see pages 3, 5 and 7.

** For dyeing directions see our "Manual of Dyeing", Vol. II (No. 2939), page 6.

2. To be dyed in a neutral bath:

With good fastness to milling next to wool:

Diamine Scarlet B, 3B†
Diamine Purpurine B†, V†, 3B†
Diamine Bordeaux B, S†

shaded if necessary with

Milling Yellow O† or
Diamine Yellow CP†.

The dyestuffs marked † are fast to stoving.

c) **Fast to Potting and Cross-Dyeing:**

After-Chroming Process:

Diamine Fast Red F
Anthracene Chrome Red A
Anthracene Yellow C.

d) **Dyestuffs for Shading Purposes:**

Anthracene Yellow, all brands, Formyl Violet S4B, Anthracene Chrome Violet B, Anthracene Chromate Violet XB, Anthracene Acid Blue RR (the latter only on chromed wool).

** For dyeing directions see our "Manual of Dyeing", Vol. II (No. 2939), pages 6 and 13.

Yellow and Green.*

a) With best possible Fastness to Milling and Light:

1. After-Chroming Process:

Yellow: Anthracene Yellow GG
(fixed with chromium fluoride)
Anthracene Yellow BN, RN, C, R.

Green: Alizarine Brilliant Green G, SE
Anthracene Chromate Green KFF extra
or
Combinations of
Anthracene Chrome Blue G, BB, F
Anthracene Blue Black C
Anthracene Yellow BN, GG
Alizarine Brilliant Green G, SE
Anthracene Chromate Green KFF extra
for saddening:
Anthracene Chrome Black 5B, PPC extra.

2. Chromate Process:

Yellow: Anthracene Chromate Yellow KL, M, GG

Green: Anthracene Chromate Green KFF extra
Alizarine Brilliant Green G, SE
or
Combinations of
Anthracene Chromate Green KFF extra
Anthracene Chromate Blue XR, MGG
Anthracene Blue Black C
Anthracene Yellow KL, M
Alizarine Brilliant Green G, SE
for saddening:
Anthracene Chromate Black STW.

* For dyeing directions see pages 3, 5 and 7.

3. Chromed Wool:

Yellow: Anthracene Yellow BN, RN, C, R

Green: Alizarine Brilliant Green G, SE
Anthracene Chromate Green KFF extra
or
Combinations of
Anthracene Chrome Blue G, BW extra
Anthracene Yellow C, BN, GG
Alizarine Brilliant Green G, SE
Anthracene Chromate Green KFF extra
for saddening:
Anthracene Acid Black DSF.

b) For particularly bright Shades:

To be dyed in an acid bath:**

Yellow: Milling Yellow O

Green: Brilliant Milling Green B
Tetra Cyanole A
in combination with
Milling Yellow O.

c) Fast to Potting and Cross-Dyeing:

After-Chroming Process:

Yellow: Anthracene Yellow C

Green:
Combinations of
Anthracene Yellow C
Anthracene Chrome Blue G, BB, F
Anthracene Chrome Black 5B, PPC extra.

d) Dyestuffs for Shading Purposes:

Brilliant Milling Green B, Tetra Cyanole A, Formyl Blue B.

Dyeings of Brilliant Milling Green B become a little paler by a severe alkaline treatment, the original shade returning however on souring off subsequently.

** For dyeing directions see our "Manual of Dyeing", Vol. II (No. 2933), page 6.

Blue and Violet.*

a) **With best possible Fastness to Milling and Light:**

1. After-Chroming Process:

Anthracene Chrome Blue F, FR, BB, G, R, B
Anthracene Acid Blue EB, ER
Anthracene Chrome Violet B.

2. Chromed Wool:

Anthracene Chrome Blue RRW extra, BW extra, G, R
Anthracene Acid Blue RR.

3. Chromate Process:

Anthracene Chromate Blue XR, MGG, RRW extra
Anthracene Chromate Violet XB.

b) **Cheaper Method of Production:**

1. After-Chroming Process:

Azo Chrome Blue T, TB
or
Combinations of
Anthracene Blue Black BE
Anthracene Chrome Black PPC extra, PPS extra, PBB, F
Anthracene Acid Black DSF, DNG, SBB
and
Brilliant Milling Blue B
Tetra Cyanole A
Formyl Blue B
Formyl Violet S4B.

2. To be dyed direct with the addition of acetate of ammonia:**

Alphanol Blue BR extra, 5RN, GN.

c) **For particularly bright, pale Shades of Blue and Violet:**

To be dyed in an acid bath:**

Brilliant Milling Blue B
Formyl Blue B
Tetra Cyanole A
Formyl Violet S4B—10B.

* For dyeing directions see pages 3, 5 and 7.

** For dyeing directions see our "Manual of Dyeing", Vol. II (No. 2939), pages 6 and 8.

d) Fast to Potting and Cross-Dyeing:

After-Chroming Process:

Anthracene Chrome Blue F, G, BB.

e) Dyestuffs for Shading Purposes:

Brilliant Milling Blue B, Formyl Blue B, Tetra Cyanole A, Brilliant Milling Green B, Formyl Violet S4B—10B, Wool Red B, Anthracene Chrome Red A, G, Anthracene Blue Black BE.

Black.*

a) With best possible Fastness to Milling, Potting and Light:

After-Chroming Process:

Anthracene Chrome Black PPC extra, PPN extra, PPS extra, P extra, PFB extra, PFR extra, PR extra, PFBB extra, 5B.

The "PP" brands are eminently fast to light.

b) With very good Fastness to Milling and Light, and good Fastness to Potting:

To be dyed with subsequent chroming:

Anthracene Chrome Black F, FE, FR, KM, PBB
Anthracene Acid Black DSF, DSN, DSFB, DNG.

c) For light milling, with good fastness to washing, particularly well suited for knitting yarns:

To be dyed in an acid bath:**

Alphanol Black R, BG, 3B, 3BN.

d) Fast to Cross-Dyeing:

After-Chroming Process:

Anthracene Chrome Black P extra, PF extra, PFB extra
Anthracene Chrome Black F, FE, 5B
Anthracene Acid Black DSF, DSN.

e) Dyestuffs for Shading Purposes:

Anthracene Yellow, all brands, Anthracene Acid Brown G, Anthracene Chromate Green KFF extra, Alizarine Brilliant Green G, SE, Anthracene Chrome Red A, Anthracene Chrome Violet B, Anthracene Chrome Blue F, Anthracene Acid Blue EB, ER;
Brilliant Milling Blue B, Formyl Violet S4B—10B, Brilliant Milling Green B, Milling Yellow O, Wool Red B (the last-mentioned dyestuffs also for acid-dyed Blacks).

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* For dyeing directions see page 5.

** For dyeing directions see our "Manual of Dyeing", Vol. II (No. 2939). page 6.

C. Dyestuffs for Military and other Uniform Cloths.

Military and other uniform cloths are nearly always dyed in the loose wool. For such material, dyestuffs of particularly good fastness (to milling, light, steaming and carbonising) are taken in the first place into account.

Cloth for facings, on the other hand, is usually dyed in the piece; for such material, good fastness to light, water and alkalies, besides good penetration, are of great importance. Acid Colours are the most frequently used for such purpose. Particulars for dyeing facings will be found in our pattern card No. 2708 and in our "Manual of Dyeing", Volume II, pages 97—110.

For uniform cloths, the following colours and mixtures come mainly into consideration:

Black dyed in the Loose Wool.

The Black required for producing Marengo, greyish black and bluish black mixture cloths (for instance, for German military trouserings as hitherto used, Austrian infantry overcoats, grey mixture cloths for railway officials, post office employés, etc.) is dyed in the loose wool with

Anthracene Chrome Black F, FE, PPC extra, PPN extra, PPS extra,

or, with

Anthracene Acid Black DSN, DSF, DNG.

Black dyed in the Piece. *

For producing very fast shades, the same dyestuffs are used as are indicated above for loose wool; the method of application is likewise the same, the dyeing being sometimes carried out on white goods and sometimes also on goods which have been bottomed in the loose wool with Indigo MLB.

The afore-mentioned dyestuffs offer the advantage of excellent penetration, and cloths dyed therewith in the piece like those dyed in the wool possess eminent fastness to light.

* For dyeing directions see page 5.

Blue dyed in the Loose Wool. *

Blue for military and other uniform cloths is dyed in the loose wool both for solid shades and for mixtures of blue and white (grey etc.). For such purposes the wool is sometimes dyed with Anthracene Colours direct, and sometimes vat-dyed with Indigo MLB and then dyed with the dyestuffs mentioned below. The following dyestuffs come particularly into consideration:

1. After-Chroming Process:
   Anthracene Chrome Blue F, FR, B, BB, G, R
   Anthracene Acid Blue EB, ER.
2. Chromed Wool:
   Anthracene Chrome Blue BW extra, RRW extra, R, G, BB.
3. Dyed direct with the Addition of Acetate of Ammonia:**
   Alphanol Blue BR extra, 5RN, GN.

Blue dyed in the Piece. *

For dyeing dark blues in the piece, the same dyestuffs are used as for blue on loose wool, and are applied in the same manner.

Blue piece-dyeings are likewise frequently bottomed first with Indigo, usually in the loose wool, the saddening or topping being then carried out in the piece with the above-mentioned dyestuffs.

Dark Green and Bluish Green dyed in the Loose Wool. *

Dark green and bluish green military and other uniform cloths (for instance for the German country police and custom-house officers' uniforms, forestry uniforms, etc.) are dyed almost without exception in the wool, the following dyestuffs being used for the purpose:

After-Chroming Process:
Combinations of
Anthracene Chrome Blue F, BB, G
Anthracene Blue Black BE
Anthracene Yellow C, GG, BN
Alizarine Brilliant Green SE, G
Anthracene Chromate Green KFF extra
saddened if necessary with
Anthracene Chrome Black 5B, PPC extra
Anthracene Acid Black DSN, DSF.

* For dyeing directions see pages 3 and 5.

** For dyeing directions see our "Manual of Dyeing", Vol. II (No. 2939), page 8.

The dark green and bluish green shades are frequently also produced on wool dyed previously with Indigo, the vat-dyed wool being dyed subsequently with the following dyestuffs:

1. After-Chroming Process:

Anthracene Chrome Blue F, G, BB
Anthracene Yellow BN, C, GG
Alizarine Brilliant Green SE, G
Anthracene Chromate Green KFF extra.

2. Chromate Process:

Anthracene Chromate Green B, KFF extra
Anthracene Chromate Blue XR
Anthracene Chromate Yellow KL, M
Alizarine Brilliant Green SE, G.

3. Dyed in an acid bath:**

Milling Yellow O
Alizarine Brilliant Green G.

For brightening the green dyeings, Brilliant Milling Green B or Tetra Cyanole A are used.

Dark Green and Bluish Green dyed in the Piece.*

The dyestuffs mentioned for loose wool may be used in like manner for piece dyeing, Anthracene Yellow BN being given the preference over Anthracene Yellow C.

In the case also of goods to be dyed in the piece, the loose wool is frequently bottomed in the Indigo vat, and after weaving and milling, the pieces are topped with Milling Yellow O, Anthracene Yellow BN, or with Anthracene Chrome Blue G, F and Anthracene Yellow BN as indicated above.

On the other hand, green on piece-goods is frequently also dyed on chromed wool, in which case the following dyestuffs are used:

Chromed Wool:

Combinations of

Anthracene Chrome Blue BW extra, G
Anthracene Yellow BN
Anthracene Blue Black BE
Alizarine Brilliant Green SE, G.

* For dyeing directions see pages 3, 5 and 7.

** For dyeing directions see our "Manual of Dyeing", Vol. II (No. 2939), page 6.

Dark Olive dyed in the Loose Wool or in the Piece. *

Dark olives are produced with the same dyestuffs as dark greens and bluish greens, with the addition of Anthracene Chrome Brown D or Anthracene Chrome Red A.

Brown dyed in the Loose Wool. *

Plain browns and browns for various mixtures are dyed in the loose wool. The following dyestuffs come into consideration for the purpose:

1. After-Chroming Process:

Combinations of

Anthracene Chrome Brown D, DWN, SWN, A
Anthracene Chromate Brown EB, ER
Anthracene Yellow C, GG, BN
Anthracene Chrome Blue F, BB, R, G
Anthracene Blue Black BE
Anthracene Chrome Red A.

2. Chromate Process:

Combinations of

Anthracene Chromate Brown EB, ER
Anthracene Chromate Yellow M, KL, GG
Anthracene Chromate Blue XR.

Browns dyed in the Piece. *

The same dyestuffs are used for this purpose as for loose wool, the following however being particularly favoured owing to their very good penetrating properties:

After-Chroming Process:

Combinations of

Anthracene Chrome Brown D, SWN
Anthracene Yellow BN
Anthracene Chrome Blue F, BB, G, R
Anthracene Blue Black BE
Anthracene Chrome Red A.

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* For dyeing directions see pages 5 and 7.

Madder Red dyed in the Loose Wool. *

For Madder Red shades the following dyestuffs are used:

After-Chroming Process:

Diamine Fast Red F (fixed with bichrome or chromium fluoride)

shaded with

Anthracene Yellow C, BN
Anthracene Chrome Blue F or
Anthracene Blue Black C

or

Anthracene Chrome Red G.

The colours obtained with Diamine Fast Red F or Anthracene Chrome Red G are distinguished from all other madder red shades by their superior fastness to alkalies and carbonising, the much simpler method of production and the better condition of the wool for milling.

Madder Red dyed in the Piece. *

The same dyestuffs are used for piece-goods as for loose wool; for shading towards yellow, Anthracene Yellow BN is however given the preference.

Red Fezzes. *

This head-dress worn in the East and adopted for various Colonial armies is dyed with the following dyestuffs:

1. After-Chroming Process:*

Diamine Fast Red F.

2. In a neutral bath:**

Diamine Scarlet B, 3B
Diamine Fast Red F.

3. In an acid bath:**

Wool Red B.

* For dyeing directions see page 5.

** For dyeing directions see our "Manual of Dyeing", Vol. II (No. 2939), pages 6 and 13.

"Field Grey" (Military Grey).

These shades have gained very great importance in recent years owing to the general desire to introduce uniforms which are as little visible as possible in the field. For such purpose "Field Grey" is eminently suited, and on account of its flat shade it offers the additional great advantage of being much less sensitive to dust and dirt than the old military shades.

"Field Grey" Trouserings for the German Army

are produced on a pale blue Indigo bottom, according to the after-chroming process, * with

1	%	Anthracene Chrome Brown D
0,35	%	Anthracene Acid Brown G
0,08	%	Anthracene Yellow C
1	%	bichrome.

The regulation shade is obtained by mixing

60 parts of dyed wool with
40 parts of white wool.

"Field Grey" Coat Cloth for the German Army

is produced as follows:

The colour is produced on a lighter Indigo bottom than the shade for the trouserings, according to the after-chroming method *, with

0,74	%	Anthracene Chrome Brown D
0,08	%	Anthracene Acid Brown G
0,1	%	Anthracene Yellow C
1	%	bichrome.

The regulation shade is obtained by mixing

65 parts of dyed wool with
35 parts of white wool.

* For dyeing directions see page 5.

"Field Grey" Shades of unsurpassed Fastness to Light.

The identical shades of "Field Grey" as described on the previous page may be obtained with very much better fastness to light by using mixing wool tinted greenish with metallic salts instead of white mixing wool.

This mixing wool stained with metallic salts possesses absolute fastness to light and is not in any way affected by exposure lasting for months or even years.

We have taken out patents or applied for patents for producing such mixtures in all the industrial countries.

Producing greenish Mixing Wool.

Charge the bath with

3—3½ % bichrome
¼ % sulphate of copper
6 % lactic acid 50 %
1 % sulphuric acid;

enter the scoured wool at 70° C. (160 deg. F.), raise to the boil, and boil for ¾ to 1 hour; when the wool, which is at first coloured yellow, has assumed a green shade and the liquor is perfectly clear, throw out, rinse, and dry.

New "Field Grey" Trouserings corresponding to the German Standard Pattern.

On a light blue Indigo Bottom:

After-Chroming Process:*

2,8 % Anthracene Chrome Brown SWN
0,1 % Anthracene Chrome Red A
0,3 % Anthracene Yellow GG
2 % bichrome.

The regulation shade is obtained by mixing
approx. 50 parts of dyed wool with
,, 50 parts of the above-mentioned greenish mixing wool.

New "Field Grey" Coat Cloth corresponding to the German Standard Pattern.

On a light blue Indigo Bottom:

After-Chroming Process:*

2,8 % Anthracene Chrome Brown SWN
0,3 % Anthracene Yellow GG
2 % bichrome.

The regulation shade is obtained by mixing
approx. 50 parts of dyed wool
,, 50 parts of greenish mixing wool.

* For dyeing directions see page 5.

"Field Grey" Military Cloth for the Italian Army.

This is produced with greenish mixing wool according to our patented process and is a little more greenish in tone than the German "Field Grey". It is dyed as follows:

a) On a dark Indigo Bottom.

After-Chroming Method: *

1,1 % Anthracene Yellow C
1,5 % Anthracene Chrome Brown D
1,75 % bichrome.

b) On a pale Indigo Bottom.

After-Chroming Method: *

3,5 % Anthracene Blue Black BE
0,9 % Anthracene Yellow C
2,5 % bichrome.

The regulation shade is obtained by mixing

45 parts of dyed wool with
55 parts of the greenish mixing wool.

The colours produced in this manner with stained mixing wool are considerably superior, both in fastness to light and in their behaviour to carbonising, to the "Field Grey" produced hitherto by the ordinary method.

An exposure of a garment for four months to every kind of weather has not had the slightest effect on the colour, whereas materials produced with white wool had suffered very much at the end of half that time already.

By modifying the shade of the wool or of the mixing wool tinted with metallic salts, the shades may be varied at will; as the case may demand, mixing wool dyed a drab shade like that for Khaki (see page 74) may be used instead of the green mixing wool.

* For dyeing directions see page 5.

Khaki.

In addition to "Field Grey", Khaki shades principally have attained to great importance during recent years owing to their being very little noticeable in the field. Khaki is sometimes dyed as a uni-colour, but more often produced by mixing.

The latter again is produced sometimes by mixing only one colour with white, and sometimes two, three or even more colours with white; for the bottom shades, a pale yellowish brown, further a gold, dark brown, and blue are used.

The English Khaki for blouses, for instance, is produced with gold, brown and light blue dyeings mixed with white, the following being the proportions:

53 parts gold	4½ parts light blue
17 parts brown	25½ parts white.

The colours are produced on white wool with the following quantities of colouring matters:

After-Chroming Process: *

A. Gold.

0,4 % Anthracene Chrome Brown D
0,3 % Anthracene Chrome Blue F
1 % Anthracene Yellow C
1 % bichrome.

B. Brown.

2,1 % Anthracene Chrome Brown D
1,25 % Anthracene Chrome Blue F
1,8 % Anthracene Yellow C
3 % bichrome.

C. Light Blue.

1 % Anthracene Chrome Blue F
0,75 % bichrome.

Khaki dyeings of considerably better fastness to light may be obtained in the same manner as afore described for "Field Grey" by using wool tinted a drab shade with metallic salts instead of white mixing wool.

Production of Drab-Coloured Mixing Wool.

Charge the bath with

3—3½ % bichrome
0,5 % sulphate of copper
6 % lactic acid 50 %
1 % sulphuric acid;

enter the scoured wool at 70° C. (160 deg. F.), raise to the boil, and boil for ¾ to 1 hour; then cool off, add

* For dyeing directions see page 5.

2 % hyposulphite of soda,

and boil for another ½ hour; then rinse, and dry.

Similar colours may be obtained by boiling first with

2 % chrome alum
2 % sulphate of copper
3 % oxalic acid

and subsequently adding

2 % hyposulphite of soda.

In order to produce the English Khaki, for instance, on blouses with much better fastness to light, the gold and brown should be dyed considerably darker, the afore-described drab-coloured mixing wool being used in place of white wool in order to attain the shade of the mixture in question.

The following are the quantities to be used for the purpose:

1. After-Chroming Process: *

A. Dark Gold.

0,6 % Anthracene Chrome Brown D
0,5 % Anthracene Chrome Blue F
2 % Anthracene Yellow C
2 % bichrome.

B. Dark Brown:

4,5 % Anthracene Chrome Brown D
1,3 % Anthracene Chrome Blue F
2,25 % Anthracene Yellow C
3 % bichrome.

C. Light Blue:

1 % Anthracene Chrome Blue F
0,75 % bichrome.

2. Chromate Process: *

A. Dark Gold.

0,4 % Anthracene Chromate Brown EB
0,2 % Anthracene Chromate Grey G
2 % Anthracene Chromate Yellow M
1,3 % bichrome.

B. Dark Brown.

2,4 % Anthracene Chromate Brown EB
2 % Anthracene Chromate Yellow M
2,2 % bichrome.

C. Light Blue.

1 % Anthracene Chromate Blue XR
0,1 % Alizarine Brilliant Green G
0,6 % bichrome.

* For dyeing directions see pages 5 and 7.

The proportions used for the mixture fast to light are:

43 parts	Dark Gold	dyed by the after-chroming or the chromate process.
10 ,,	Dark Brown	
5 ,,	Pale Blue	
42 ,,	Drab-coloured mixing wool.	

By mixing other ground colours with the drab-coloured mixing wool, numerous other mixtures of eminent fastness, very little visible in the field, may be obtained.

Khaki dyed in the Piece.

For Khaki shades produced in the piece, the following dyestuffs are used:

1. Dyed by the After-Chroming Process or on Chromed Wool:*

   Combinations of

   Anthracene Chrome Brown D
   Anthracene Yellow BN, RN
   Anthracene Chrome Red A
   Anthracene Blue Black BE, C
   Anthracene Chrome Blue F.

2. Dyed by the Chromate Process: *

   Combinations of

   Anthracene Chromate Brown EB, ER
   Anthracene Chromate Yellow KL, M, FL
   Anthracene Blue Black C
   Anthracene Chromate Blue XR
   Anthracene Chromate Violet XB.

In some special cases Diamine Colours are used for dyeing Khaki shades in the piece, the following in particular:

Dyed in a neutral bath: **

Diamine Fast Yellow FF
Diamine Fast Red F
Diamine Fast Blue G.

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* For dyeing directions see pages 3, 5 and 7.

** For dyeing directions see our "Manual of Dyeing", Vol. II (No. 2939), page 13.

D. Dyestuffs for Piece-Dyeing.

Grey and Mode Shades.*

a) For very pale Shades, with best Levelling:

1. Chromed Wool:

Combinations of

Anthracene Yellow BN
Anthracene Chrome Brown D
Anthracene Chromate Brown EB
Anthracene Blue Black C
Anthracene Chrome Red A.

2. After-Chroming Process:

Combinations of

Anthracene Yellow BN, RN, GG
Anthracene Chrome Brown D, SWN
Anthracene Blue Black C
Anthracene Chrome Blue G
Anthracene Chrome Red A
Anthracene Chrome Violet B.

3. Chromate Process:

Combinations of

Anthracene Chromate Yellow KL, M
Anthracene Chromate Brown EB
Anthracene Chromate Grey G
Anthracene Blue Black C
Anthracene Chromate Violet XB
Anthracene Chromate Black D.

b) For Medium and Deep Shades:

1. Chromed Wool:

Combinations of the dyestuffs indicated under a) 1. and

Anthracene Chrome Red G
Anthracene Chromate Brown WS, WG
Anthracene Blue Black BE
Anthracene Chrome Blue G, BB.

* For dyeing directions see pages 3, 5 and 7.

2. After-Chroming Process:

Combinations of the dyestuffs indicated under a) 2 and

Anthracene Chrome Brown DWN, DW
Anthracene Blue Black BE
Anthracene Chrome Blue BB, F
Anthracene Chrome Black PPS extra (for saddening very deep shades of grey).

3. Chromate Process:

Combinations of the dyestuffs indicated under a) 3. and

Anthracene Chromate Brown WS, WG, 3G, ER
Anthracene Chromate Red Y
Anthracene Chromate Blue XR
Anthracene Chromate Green B, KFF extra
Anthracene Chromate Black STW.

c) **For Piece-Goods with Cotton Effects:**

1. Chromed Wool:

Combinations of

Anthracene Yellow BN, RN
Anthracene Chrome Red A
Anthracene Chrome Violet B
Anthracene Chrome Blue F, R
Anthracene Blue Black BE.

2. After-Chroming Process:

Combinations of

Anthracene Yellow BN, RN
Anthracene Chrome Brown SWN
Anthracene Chrome Red A
Anthracene Chrome Violet B
Anthracene Chrome Blue F, R, B
Anthracene Blue Black BE
Anthracene Chrome Black PPS extra.

3. Chromate Process:

Combinations of

Anthracene Chromate Yellow KL
Anthracene Chromate Grey G
Anthracene Chromate Violet XB
Anthracene Chromate Blue XR
Anthracene Chromate Green B, KFF extra
Anthracene Chromate Black STW.

d) **For Piece-Goods with Silk Effects:**

1. Chromed Wool:

Combinations of

Anthracene Yellow BN, GG
Anthracene Chrome Red A
Anthracene Chrome Violet B
Anthracene Chrome Blue F, R.

2. Chromate Process:

Combinations of

Anthracene Chromate Green WS
Anthracene Chromate Yellow KL
Anthracene Chromate Red Y
Anthracene Chromate Violet XB
Anthracene Chromate Blue XR
Anthracene Chromate Grey G
Alizarine Brillant Green G.

e) **Dyestuffs for Shading Purposes:**

Alizarine Brilliant Green G, SE, Tetra Cyanole A, Wool Red B.

For shading piece-goods with silk effects:

Fast Acid Yellow TL, Acid Yellow AT, Orange GG, Lanafuchsine SG, Brilliant Lanafuchsine SL, Cyanole extra.

Brown and Olive.*

a) With best possible Fastness:

1. After-Chroming Process:

Combinations of

Anthracene Chrome Brown D, DWN, SWN, DW
Anthracene Chromate Brown EB, ER, WS, WG
Anthracene Yellow BN, RN, GG
Anthracene Chrome Red A, G
Anthracene Blue Black C, BE
Anthracene Chrome Blue BB, G, F, R
Anthracene Chrome Violet B
Alizarine Brilliant Green G, SE
Anthracene Chromate Green KFF extra
Anthracene Chrome Black PPC extra, PPS extra (for very deep shades).

2. Chromed Wool:

Combinations of

Anthracene Chromate Brown EB, WS, WG
Anthracene Yellow BN
Anthracene Blue Black C, BE
Anthracene Chrome Blue G
Alizarine Brilliant Green G, SE
Anthracene Chromate Green KFF extra

saddened if necessary with

Anthracene Acid Black DSF.

3. Chromate Process:

Combinations of

Anthracene Chromate Brown EB, ER, WS, WG, [3G
Anthracene Chromate Yellow KL, M
Anthracene Chromate Red Y
Anthracene Chromate Grey G
Anthracene Blue Black C
Anthracene Chromate Blue XR
Anthracene Chromate Violet XB
Anthracene Chromate Green B, KFF extra
Alizarine Brilliant Green G, SE.

* For dyeing directions see pages 3, 5 and 7.

b) **Cheaper Method of Production:**

1. After-Chroming Process:

Combinations of

Anthracene Acid Brown G, N, B
Anthracene Chrome Brown DWN
Anthracene Chromate Brown EB
Anthracene Yellow C
Anthracene Chrome Black PPC extra.

2. Chromate Process:

Combinations of

Antracene Chromate Brown EB, ER, WS, WG, [3G
Anthracene Chromate Yellow KL
Anthracene Chromate Blue XR
Anthracene Chromate Green B
Anthracene Chromate Black STW.

c) **For Piece-Goods with Cotton Effects:**

1. After-Chroming Process:

Combinations of

Anthracene Chrome Red A
Anthracene Yellow BN, RN
Anthracene Chrome Violet B
Anthracene Chrome Blue F, R, B
Anthracene Blue Black BE
Anthracene Chromate Green KFF extra
Alizarine Brilliant Green G, SE
Anthracene Chrome Black PPS extra.

2. Chromed Wool:

Combinations of

Anthracene Chrome Brown SWN
Anthracene Yellow BN, RN
Anthracene Chrome Red A
Anthracene Chrome Blue F, R
Anthracene Blue Black BE
Alizarine Brilliant Green G, SE.

d) **For Piece-Goods with Silk Effects:**

1. Chromed Wool:

Combinations of

Anthracene Chrome Red A
Anthracene Yellow BN
Anthracene Chrome Violet B
Anthracene Chrome Blue F, R
Anthracene Chromate Green B.

2. Chromate Process:

Combinations of

Anthracene Chromate Red Y
Anthracene Chromate Yellow KL
Anthracene Chromate Grey G
Anthracene Chromate Violet XB
Anthracene Chromate Blue XR
Anthracene Chromate Green B.

e) **Dyestuffs for Shading Purposes:**

Tetra Cyanole A, Wool Red B.

For shading piece-goods with silk effects:

Fast Acid Yellow TL, Acid Yellow AT, Lanafuchsine SG, Brilliant Lanafuchsine SL, Azo Wool Blue C.

Red, Orange and Claret.*

a) With best possible Fastness:

1. Dyed by the After-Chroming Process or on Chromed Wool:

Red: Anthracene Chrome Red A, G
Diamine Fast Red F

Orange: The same dyestuffs shaded with
Anthracene Yellow RN, BN

Claret: The same dyestuffs shaded with
Anthracene Chrome Violet B.

2. Chromate Process:

Red: Anthracene Chromate Red Y, 6R

Orange: The same dyestuffs shaded with
Anthracene Chromate Yellow KL

Claret: The same dyestuffs shaded with
Anthracene Chromate Violet XB.

b) For particularly bright Shades:

1. Dyed in an acid bath: **

Red: Wool Red B

Orange: Wool Red B shaded with
Milling Yellow O

Claret: Wool Red B shaded with
Formyl Violet S4B—10B.

2. Dyed in a neutral bath:**

Red: Diamine Scarlet B, 3B
Diamine Purpurine B, V, 3B

Orange: The same dyestuffs shaded with
Milling Yellow O or
Diamine Yellow CP

Claret: Diamine Bordeaux B.

* For dyeing directions see pages 3, 5 and 7.

** For dyeing directions see our "Manual of Dyeing", Vol. II (No. 2939), pages 6 and 13.

c) For Piece-Goods with Cotton Effects:

1. Dyed by the After-Chroming Process or on Chromed Wool:

Anthracene Chrome Red A
Anthracene Chrome Violet B
Anthracene Yellow BN, RN.

2. Dyed in an acid bath: **

Wool Red B
Milling Yellow O
Formyl Violet S4B.

d) For Piece-Goods with Silk Effects:

1. Chromed Wool:

Anthracene Chrome Red A
Anthracene Chrome Violet B
Anthracene Yellow BN.

2. Chromate Process:

Anthracene Chromate Red Y
Anthracene Chromate Violet XB
Anthracene Chromate Yellow KL.

e) Dyestuffs for Shading Purposes:

Anthracene Yellow BN, RN, GG, Milling Yellow O, Rosazeïne B, Formyl Violet S4B—10B, Brilliant Milling Blue B, Anthracene Acid Blue RR (to be dyed only on chromed wool), Anthracene Chrome Blue R, Anthracene Chromate Violet XB.

For shading piece-goods with silk effects:

Lanafuchsine SG, Naphtol Red C, Orange GG, Fast Acid Yellow TL, Acid Yellow AT, Azo Wool Violet 7R.

** For dyeing directions see our "Manual of Dyeing", Vol. II (No. 2939), page 6.

Yellow and Green*

a) With best possible fastness:

1. After-Chroming Process:

Yellow: Anthracene Yellow GG (fixed with chromium fluoride)
Anthracene Yellow BN, RN

Green: Alizarine Brilliant Green G, SE
Anthracene Chromate Green KFF extra
or
Combinations of
Anthracene Chrome Blue G, BB, F
Anthracene Yellow BN, GG
Anthracene Chromate Green KFF extra
Alizarine Brilliant Green G, SE;
for saddening:
Anthracene Chrome Black PPS extra, 5B.

2. Chromed Wool:

Yellow: Anthracene Yellow BN, RN, GG

Green: Alizarine Brilliant Green G, SE
Anthracene Chromate Green KFF extra
or
Combinations of
Anthracene Chrome Blue G, BW extra, BB, F
Anthracene Yellow BN, GG
Alizarine Brilliant Green G, SE
Anthracene Chromate Green KFF extra
saddened, if necessary, with
Anthracene Chrome Black PPS extra.

* For dyeing directions see pages 3, 5 and 7.

3. Chromate Process:

Yellow: Anthracene Chromate Yellow KL, GG

Green: Alizarine Brilliant Green G, SE
Anthracene Chromate Green B, KFF extra
or
Combinations of
Anthracene Chromate Green B, KFF extra
Anthracene Chromate Blue XR
Anthracene Chromate Yellow KL, GG
Alizarine Brilliant Green G, SE
for saddening:
Anthracene Chromate Grey G.

b) For particularly bright Shades:

Dyed in an acid bath: **

Yellow: Milling Yellow O

Green: Alizarine Brilliant Green G
Tetra Cyanole A
Brilliant Milling Green B
or combinations of these dyestuffs.

c) For Piece-Goods with Cotton Effects:

1. Dyed by the After-Chroming Process or on Chromed Wool:

Anthracene Yellow BN, RN
Alizarine Brilliant Green G, SE
Anthracene Chromate Green KFF extra
Anthracene Chrome Blue F
Anthracene Chrome Black PPS extra.

2. Chromate Process:

Anthracene Chromate Yellow KL, GG
Alizarine Brilliant Green G, SE
Anthracene Chromate Green B, KFF extra
Anthracene Chromate Blue XR
Anthracene Chromate Grey G.

** For dyeing directions see our "Manual of Dyeing", Vol. II (No. 2939), page 6.

3. Dyed in an acid bath: **

Milling Yellow O
Alizarine Brilliant Green G
Tetra Cyanole A
Brilliant Milling Green B.

d) For Piece-Goods with Silk Effects:

1. Chromed Wool:

Anthracene Yellow BN, GG
Anthracene Chrome Blue F
Anthracene Chromate Green B, KFF extra
Alizarine Brilliant Green G.

2. Chromate Process:

Anthracene Chromate Yellow KL
Anthracene Chromate Green B, KFF extra
Alizarine Brilliant Green G
Anthracene Chromate Blue XR
Anthracene Chromate Grey G.

e) Dyestuffs for Shading Purposes:

Brilliant Milling Green B, Tetra Cyanole A, Formyl Blue B, Anthracene Blue Black C, BE.

For shading piece-goods with silk effects:

Acid Yellow AT, Acid Green extra conc., Azo Wool Blue C.

Blue and Violet.*

a) With best possible Fastness:

1. Chromed Wool:

Anthracene Chrome Blue RRW extra, BW extra, G, R, B, BB, F
Anthracene Acid Blue ER, EB, RR
Anthracene Chrome Violet B.

2. After-Chroming Process:

Anthracene Chrome Blue F, FR, BB, R, B, G
Anthracene Acid Blue EB, ER
Anthracene Chrome Violet B.

3. Chromate Process:

Anthracene Chromate Blue XR, RRW extra
Anthracene Chromate Violet XB.

b) Cheaper Method of Production:

1. Dyed by the After-Chroming Process:

Azo Chrome Blue T, TB

or combinations of:

Anthracene Blue Black BE
Anthracene Chrome Black PPS extra, F, PBB
Anthracene Acid Black SR, SBB
and
Formyl Violet S4B—10B
Formyl Blue B
Brilliant Milling Blue B
Tetra Cyanole A.

2. Dyed direct with the addition of acetate of ammonia. **

Alphanol Blue BR extra, 5RN, GN.

c) For particularly bright Blues and Violets:

To be dyed in an acid bath: **

Brilliant Milling Blue B
Tetra Cyanole A
Formyl Violet S4B—10B.

* For dyeing directions see pages 3, 5 and 7.

** For dyeing directions see our "Manual of Dyeing", Vol. II (No. 2939), pages 6 and 8.

d) For Piece-Goods with Cotton Effects:

1. Chromed Wool:

Anthracene Chrome Blue F, R, B
Anthracene Acid Blue ER, EB
Anthracene Chrome Violet B.

2. After-Chroming Process:

Anthracene Chrome Blue F, FR, R
Anthracene Acid Blue EB, ER
Azo Chrome Blue T, TB
Anthracene Chrome Violet B
or combinations of
Anthracene Blue Black BE
Anthracene Chrome Black PPS extra
Anthracene Acid Black SR, SBB
and
Formyl Violet S4B—10B
Formyl Blue B
Brilliant Milling Blue B
Tetra Cyanole A.

3. Chromate Process:

Anthracene Chromate Blue XR
Anthracene Chromate Violet XB.

4. Dyed direct with the addition of acetate of ammonia. **

Alphanol Blue BR extra, 5RN, GN.

e) For Piece-Goods with Silk Effects:

Chromed Wool:

Anthracene Chrome Blue F, R, 2298 J
Anthracene Chrome Violet B.

f) Dyestuffs for Shading Purposes:

Brilliant Milling Blue B, Formyl Blue B, Formyl Violet S4B—10B, Tetra Cyanole A, Wool Red B, Anthracene Chrome Red A.

For shading piece-goods with silk effects:

Alizarine Lanacyl Blue BB, R, Alizarine Lanacyl Violet B, Cyanole extra, FF, Azo Wool Blue C, Azo Wool Violet 7R.

** For dyeing directions see our "Manual of Dyeing", Vol. II (No. 2939), page 8.

Blacks.*

a) **With best possible Fastness to Light, Steaming, Alkalies and Perspiration:**

After-Chroming Method:

Anthracene Chrome Black PPS extra, PPC extra, PPN extra, PFB extra, PFBB extra, P extra, PBB, F, 5B, KM.

The "PP" and "P" brands are especially fast to potting.

b) **With very good Fastness to Light, Alkalies, Perspiration and Steaming:**

After-Chroming Method:

Anthracene Acid Black SR, SRG, SRT, ST, DSF, DSN, DSFB, DNG.

c) **With good Fastness to Light, Alkalies and Perspiration:**

To be dyed in an acid bath: **

Alphanol Black BG, R, 3B, 3BN, KN.

d) **For Piece-Goods with Cotton Effects:**

After-Chroming Process:

Anthracene Chrome Black PPS extra, PPN extra
Anthracene Acid Black ST, SR, SRT.

e) **For Piece-Goods with Silk Effects:**

After-Chroming Process:

Anthracene Acid Black ST
Chrome Black B for Wool and Silk Goods. ***

f) **Dyestuffs for Shading Purposes:**

Anthracene Yellow BN, RN, Anthracene Acid Brown G, Anthracene Chrome Red A, Anthracene Chrome Violet B, Anthracene Chromate Green KFF extra, Alizarine Brilliant Green G, SE, Anthracene Chrome Blue F, Anthracene Acid Blue EB, ER, Wool Red B, Brilliant Milling Blue B, Tetra Cyanole A, Formyl Violet S4B—10B.

For shading piece-goods with silk effects:

Anthracene Yellow BN, Anthracene Chrome Violet B, Anthracene Chrome Blue F, Anthracene Chromate Green B, KFF extra.

* For dyeing directions see page 5.

** For dyeing directions see our "Manual of Dyeing", Vol. II (No. 2939), page 6.

*** The dyeing of Chrome Black B for Wool and Silk Goods is commenced with formic acid, the goods being after-chromed in a fresh bath.

E. Dyestuffs for Machine-Dyeing

with special reference to the dyeing of Cops and Cross Spools.

Dyeing of Loose Wool and Wool Yarns in Dyeing Machines.

When dyeing loose wool and yarns in apparatus, care has to be taken that the material is not pressed down too hard; the machines which are best suited for the purpose therefore are those in which the wool is held down only by a cover lying on loosely or lightly weighted. In the dyeing of yarns, special attention has likewise to be paid to the way in which the hanks are placed in the apparatus to avoid the formation of channels during the dyeing, which is apt to cause unevenness.

The importance of having the dyestuffs in a complete state of solution has likewise very carefully to be borne in mind in order to avoid uneven shades. Boiling condensed water is used to best advantage for dissolving the dyestuffs, the solution being added to the dyebath through a fine sieve or a piece of cotton cloth.

Dyeing of Wool Yarn in Form of Cops or Cross Spools.

In the following tables will be found a list of dyestuffs suitable for dyeing cops and cross spools by both the spindle and the packing system.

Cops and cross spools are usually dyed either according to the after-chroming or the chromate process, dyeing on a chrome mordant being resorted to in special cases only, for instance, for the production of bright blues. When dyeing Greys, Mode Colours, Browns and Olives according to the after-chroming process, it is advisable to add the amount of acid requisite for dyeing in one lot at the beginning of the operation, commencing at a low temperature

and raising the same gradually to the boil. By this means the subsequent addition of acid, which is the most frequent cause of unevenness, may be obviated; this is the most reliable way of obtaining good, even shades. The chroming is always carried out to best advantage in a fresh bath, but in any case the liquor should be cooled down to 50—60° C. (120—140 deg. F.) before adding the bichrome.

Grey and Mode Shades.*

1. After-Chroming Process:

Combinations of

Anthracene Yellow BN, RN, GG
Anthracene Chrome Brown D, SWN
Anthracene Blue Black C
Anthracene Chrome Blue G
Anthracene Chrome Red A
Anthracene Chrome Violet B;

for medium and deep tones also:

Anthracene Chrome Brown DWN
Anthracene Blue Black BE
Anthracene Chrome Blue BB.

2. Chromate Process:

Combinations of

Anthracene Chromate Yellow KL
Anthracene Chromate Brown EB
Anthracene Chromate Grey G
Anthracene Blue Black C
Anthracene Chromate Violet XB
Anthracene Chromate Blue XR
Anthracene Chromate Black D.

Dyestuffs for Shading Purposes:

Alizarine Brilliant Green G, SE, Brilliant Milling Green B, Tetra Cyanole A, Wool Red B.

* For dyeing directions see pages 5 and 7.

Brown and Olive.*

1. After-Chroming Process:

Combinations of

Anthracene Chrome Brown D, DWN, SWN
Anthracene Yellow BN, RN, GG
Anthracene Chrome Red A
Anthracene Blue Black C, BE
Anthracene Chrome Blue BB, G
Anthracene Chrome Violet B
Alizarine Brilliant Green G, SE
Anthracene Chromate Green KFF extra
Anthracene Chrome Black PPC extra.

2. Chromate Process:

Combinations of

Anthracene Chromate Brown EB, ER, WS, [WG, 3G
Anthracene Chromate Yellow KL, GG
Anthracene Chromate Red Y
Anthracene Chromate Grey G
Anthracene Blue Black C
Anthracene Chromate Blue XR
Anthracene Chromate Violet XB
Anthracene Chromate Black STW
Anthracene Chromate Green KFF extra
Alizarine Brilliant Green G, SE.

Dyestuffs for Shading Purposes:

Brilliant Milling Green B, Tetra Cyanole A, Wool Red B, Diamine Fast Red F.

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* For dyeing directions see pages 5 and 7.

Red, Orange and Claret.*

1. After-Chroming Process:

Red: Anthracene Chrome Red G
Anthracene Chrome Red A

Orange: The above-named dyestuffs shaded with Anthracene Yellow RN, BN

Claret: The above-named dyestuffs shaded with Anthracene Chrome Violet B.

2. Chromate Process:

Red: Anthracene Chromate Red Y

Orange: The same, shaded with Anthracene Chromate Yellow KL, GG

Claret: The same, shaded with Anthracene Chromate Violet XB.

Dyestuff for Shading Purposes:

Formyl Violet S4B.

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* For dyeing directions see pages 5 and 7.

Yellow and Green.*

1. After-Chroming Process:

Yellow: Anthracene Yellow GG (fixed with chromium fluoride)
Anthracene Yellow BN, RN

Green: Alizarine Brilliant Green G, SE
Anthracene Chromate Green KFF extra
or,
Combinations of
Anthracene Chrome Blue G, BB
Anthracene Blue Black C
Anthracene Yellow BN, GG
Alizarine Brilliant Green G, SE.

2. Chromate Process:

Yellow: Anthracene Chromate Yellow KL, GG

Green: Alizarine Brilliant Green G, SE
Anthracene Chromate Green KFF extra
or,
Combinations of
Anthracene Chromate Blue XB
Anthracene Blue Black C
Anthracene Chromate Yellow KL, GG
Anthracene Chromate Green KFF extra
Alizarine Brilliant Green G, SE.

Dyestuffs for Shading Purposes:

Brilliant Milling Green B, Tetra Cyanole A, Formyl Blue B.

Dyeings of Brilliant Milling Green B become a little paler on severe alkaline treatment, the original shade returning however on souring off subsequently.

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* For dyeing directions see pages 5 and 7.

Blue and Violet.*

a) **With best possible Fastness to Milling and Light:**

1. After-Chroming Process:

Anthracene Chrome Blue F, FR, BB, G
Anthracene Acid Blue EB, ER
Anthracene Chrome Violet B.

2. Chromed Wool:

Anthracene Chrome Blue RRW extra, BW extra, [G, R
Anthracene Acid Blue RR.

3. Chromate Process:

Anthracene Chromate Blue XR
Anthracene Chromate Violet XB.

b) **Cheaper Method of Production:**

After-Chroming Process:

Combinations of
Anthracene Blue Black BE
Anthracene Chrome Black PPC extra, PPS extra, PBB
and
Formyl Violet S4B
Brilliant Milling Blue B
Formyl Blue B
Tetra Cyanole A.

c) **Fast to Potting and Cross-Dyeing:**

After-Chroming Process:

Anthracene Chrome Blue F, G, BB.

d) **Dyestuffs for Shading Purposes:**

Brilliant Milling Blue B, Formyl Blue B, Tetra Cyanole A, Brilliant Milling Green B, Formyl Violet S4B—10B, Wool Red B, Anthracene Chrome Red A, Anthracene Blue Black BE.

* For dyeing directions see pages 3, 5 and 7.

Black.*

a) **With best possible Fastness to Milling, Potting and Light:**

After-Chroming Process:

Anthracene Chrome Black PPC extra, PPN extra, PPS extra, P extra, PFB extra, 5B.

The "PP" brands are eminently fast to light.

b) **With very good Fastness to Milling and Light, and good Fastness to Potting:**

After-Chroming Process:

Anthracene Chrome Black F, FE, KM, PBB
Anthracene Acid Black DSF, DSFB, SR.

Dyestuffs for Shading Purposes:

Anthracene Yellow BN, RN, Anthracene Acid Brown G, Anthracene Chromate Green KFF extra, Alizarine Brilliant Green G, SE, Anthracene Chrome Red A, Anthracene Chrome Blue F.

* For dyeing directions see page 5.

F. Dyestuffs for Shoddy.

Grey and Mode Shades.*

a) For carbonised material which has not been neutralised:

1. After-Chroming Process:

Combinations of

Anthracene Yellow BN
Anthracene Chrome Brown D, SWN
Anthracene Chrome Blue G, BB
Anthracene Chrome Red A
Anthracene Chrome Violet B
Anthracene Acid Black SBB, SAS.

2. Chromed Wool:

Combinations of

Anthracene Yellow BN, C
Anthracene Chrome Brown D
Anthracene Chromate Brown EB
Anthracene Chrome Blue G, BB
Anthracene Blue Black BE
Anthracene Chromate Green KFF extra
Anthracene Chrome Red A.

b) For uncarbonised (all-wool) or neutralised material:

1. After-Chroming Process:

Combinations of the dyestuffs indicated under a) 1 and

Anthracene Yellow C
Anthracene Chrome Brown DWN, DW
Anthracene Chromate Brown EB
Anthracene Blue Black BE
Anthracene Chrome Black PPC extra.

* For dyeing directions see pages 3, 5 and 7.

2. Chromate Process:

Combinations of

Anthracene Chromate Yellow KL, M
Anthracene Chromate Brown EB, 3G, WS, WG
Anthracene Chromate Grey G
Anthracene Blue Black C
Anthracene Chromate Blue XR
Anthracene Chromate Green KFF extra.

3. Chromed Wool:

The same dyestuffs as indicated sub a) 2.

c) Fast to Potting and Cross-Dyeing:

Dyed by the After-Chroming Process:

Combinations of

Anthracene Yellow C
Anthracene Chrome Brown D, SWN
Anthracene Chrome Red A
Anthracene Blue Black BE
Anthracene Chrome Blue G, BB
Anthracene Chrome Black PPC extra.

d) Dyestuffs for Shading Purposes:

Alizarine Brilliant Green G, SE, Brilliant Milling Green B, Tetra Cyanole A, Wool Red B.

Brown and Olive Shades.*

a) For carbonised material which has not been neutralised:

1. After-Chroming Process:

Combinations of

Anthracene Chrome Brown D, SWN
Anthracene Yellow BN, RN
Anthracene Chrome Red A
Anthracene Chrome Blue BB, G, R
Anthracene Chrome Violet B
Anthracene Chromate Green KFF extra
Alizarine Brilliant Green SE
Anthracene Acid Black SBB.

2. Chromed Wool:

Combinations of

Anthracene Acid Brown B
Anthracene Chromate Brown EB, WS, WG
Anthracene Yellow C
Anthracene Blue-Black BE
Anthracene Chrome Blue G, BB, R
Anthracene Chromate Green KFF extra
Alizarine Brilliant Green SE;

for saddening if necessary:

Anthracene Acid Black DSF.

b) For uncarbonised (all-wool) or neutralised material:

1. After-Chroming Process:

Combinations of the products indicated under a) 1. and

Anthracene Chrome Brown DWN, DW
Anthracene Chromate Brown EB, WS, WG
Anthracene Acid Brown N, B
Anthracene Yellow C
Anthracene Blue Black BE
Anthracene Chrome Black PPC extra.

* For dyeing directions see pages 3, 5 and 7.

2. Chromate Process:

Combinations of

Anthracene Chromate Brown EB, ER, WS, [WG, 3G
Anthracene Chromate Yellow KL, M
Anthracene Chromate Red Y
Anthracene Blue Black C
Anthracene Chromate Grey G
Anthracene Chromate Blue XR
Anthracene Chromate Violet XB
Anthracene Chromate Green B, KFF extra;

for saddening if necessary:

Anthracene Chromate Black STW.

c) Fast to Potting and Cross-Dyeing:

After-Chroming Process:

Anthracene Chrome Brown D, SWN
Anthracene Yellow C
Anthracene Chrome Red A
Anthracene Blue Black BE
Anthracene Chrome Blue G, BB
Anthracene Chrome Black PPC extra.

d) Dyestuffs for Shading Purposes:

Alizarine Brilliant Green SE, Brilliant Milling Green B, Tetra Cyanole A, Wool Red B, Diamine Fast Red F.

Red, Orange and Claret.*

a) For carbonised material which has not been neutralised:

1. After-Chroming Process:

Red: Anthracene Chrome Red A

Orange: The same shaded with Anthracene Yellow RN, BN

Claret: The same, shaded with Anthracene Chrome Violet B.

2. Chromed Wool:

The same dyestuffs as indicated for dyeing by the After-Chroming Process.

b) For uncarbonised (all-wool) or neutralised material:

1. After-Chroming Process:

Red: Diamine Fast Red F
Anthracene Chrome Red G
Anthracene Chrome Red A.

Orange: The same dyestuffs, shaded with Anthracene Yellow RN, BN, R, C.

Claret: The same dyestuffs, shaded with Anthracene Chrome Violet B.

2. Chromate Process:

Red: Anthracene Chromate Red Y, 6R.

Orange: The same dyestuffs, shaded with Anthracene Yellow RN, BN, R, C.

Claret: The same dyestuffs, shaded with Anthracene Chromate Violet XB.

3. Chromed Wool:

The same dyestuffs as indicated under b) 1 to be dyed by the After-Chroming Process.

* For dyeing directions see pages 3, 5 and 7.

c) For particularly bright Reds:

Milling Red G
Wool Red B
shaded if necessary with
Milling Yellow O or
Formyl Violet S4B

(dyed to best advantage on neutralised or at least partially neutralised material).

d) Fast to Potting and Cross-Dyeing:

After-Chroming Process:

Anthracene Chrome Red A
Diamine Fast Red F
Anthracene Yellow C.

e) Dyestuffs for Shading Purposes:

Anthracene Yellow, all brands, Rhodamine B, Formyl Violet S4B, Milling Red G, Wool Red B, Anthracene Chrome Violet B.

** For dyeing directions see our "Manual of Dyeing", Vol. II (No. 2939), page 6.

Yellow and Green.*

a) For carbonised material which has not been neutralised:

After-Chroming Process:

Yellow: Anthracene Yellow BN

Green: Combinations of
Anthracene Yellow BN
Anthracene Chrome Blue G
saddened if necessary with
Anthracene Acid Black SAS.

b) For uncarbonised (all-wool) or neutralised material:

1. After-Chroming Process:

Yellow: Anthracene Yellow BN, C, GG (the GG brand fixed with chromium fluoride)

Green: Alizarine Brilliant Green SE, G
Anthracene Chromate Green KFF extra
or
Combinations of
Anthracene Chrome Blue G, BB
Anthracene Yellow BN, C, GG
Anthracene Chromate Green KFF extra
Alizarine Brilliant Green SE, G;
for saddening:
Anthracene Chrome Black 5B, PPC extra.

2. Chromate Process:

Yellow: Anthracene Chromate Yellow KL, M, GG

Green: Anthracene Chromate Green B, KFF extra
or
Combinations of the same with
Anthracene Chromate Blue XR
Anthracene Chromate Yellow KL, M, GG
Alizarine Brilliant Green SE, G.

* For dyeing directions see pages 3, 5 and 7.

3. Chromed Wool:

Yellow: Anthracene Yellow C, BN

Green: Alizarine Brilliant Green SE, G
Anthracene Chromate Green KFF extra
or
Combinations of
Anthracene Chrome Blue G, BW extra
Anthracene Yellow C, BN
Anthracene Chromate Green KFF extra
Alizarine Brilliant Green SE, G.

c) For particularly bright Shades:

1. Dyed in an acid bath:**

Yellow: Milling Yellow O

Green: Alizarine Brilliant Green G
Brilliant Milling Green B
Tetra Cyanole A
shaded if necessary with
Milling Yellow O.

d) Dyestuffs for Shading Purposes:

Brilliant Milling Green B, Tetra Cyanole A, Formyl Blue B.

Dyeings of Brilliant Milling Green B become a little paler by a severe alkaline treatment, the original shade returning however when souring off subsequently.

** For dyeing directions see our "Manual of Dyeing", Vol. II (No. 2939), page 6.

Blue and Violet.*

a) For carbonised material which has not been neutralised:

After-Chroming Process:

Anthracene Chrome Blue F, BB, G
Anthracene Chrome Violet B
or more cheaply with
Combinations of
Anthracene Acid Black SR, SBB
and
Brilliant Milling Blue B
Tetra Cyanole A
Formyl Blue B
Formyl Violet S4B—10B.

b) For uncarbonised (all-wool) or neutralised material:

1. After-Chroming Process:

Anthracene Acid Blue EB, ER
Anthracene Chrome Violet B
or more cheaply with
Combinations of
Anthracene Blue Black BE
Anthracene Chrome Black PPC extra, F, PBB
Anthracene Acid Black DSF, DNG
and
Brilliant Milling Blue B
Tetra Cyanole A
Formyl Blue B
Formyl Violet S4B—10B.

2. Chromed Wool:

Anthracene Chrome Blue RRW extra, BW extra, G, R
Anthracene Acid Blue EB, ER, RR.

3. Chromate Process:

Anthracene Chromate Blue XR, RRW extra
Anthracene Chromate Violet XB.

* For dyeing directions see pages 3, 5 and 7.

4. Dyed direct with the addition of acetate of ammonia:**

Alphanol Blue BR extra, 5RN, GN.

c) For particularly bright Blues and Violets:

Dyed in an acid bath:**

Brilliant Milling Blue B
Tetra Cyanole A
Formyl Blue B
Formyl Violet S4B—10B.

d) Fast to Potting and Cross-Dyeing:

Dyed by the After-Chroming Process:

Anthracene Chrome Blue F, BB, G.

e) Dyestuffs for Shading Purposes:

Brilliant Milling Blue B, Formyl Blue B, Tetra Cyanole A, Brilliant Milling Green B, Formyl Violet S4B—10B, Wool Red B.

** For dyeing directions see our "Manual of Dyeing", Vol. II (No. 2939), pages 6 and 8.

Black.*

a) For carbonised material which has not been neutralised:

After-Chroming Process:

With very good fastness to milling, particularly next to white wool:

Anthracene Acid Black SAS, SASG, SASB, SASN.

b) For uncarbonised (all-wool) or neutralised material:

After-Chroming Process:

With very good fastness to milling and light:

Anthracene Acid Black DSF, DNG
Anthracene Chrome Black F, 5B.

With best possible fastness to milling and potting:

Anthracene Chrome Black 1465 J, PF extra, PPC extra.

c) For articles to be cross-dyed:

After-Chroming Process:

Anthracene Chrome Black 1465 J, PF extra
Anthracene Chrome Black F, 5B
Anthracene Acid Black DSF.

d) For light milling (with good fastness to washing):

Dyed in an acid bath:**

Alphanol Black BG, R, 3B, 3BN.

e) Dyestuffs for Shading Purposes:

Anthracene Yellow, all brands, Anthracene Acid Brown G, Anthracene Chrome Red A, Anthracene Acid Blue EB, ER, Brilliant Milling Green B, Brilliant Milling Blue B, Tetra Cyanole A, Formyl Violet S4B—10B, Wool Red B, Milling Yellow O.

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* For dyeing directions see page 5.

** For dyeing directions see our "Manual of Dyeing", Vol. II (No. 2939), page 6.

G. Vigoureux Printing
(Printing of Slubbing).

Apart from their application for the dyeing of loose wool, slubbing, yarn, piece-goods, hats, etc., the Anthracene Chrome and Anthracene Acid Colours are largely employed for Vigoureux printing. They are especially serviceable when the printed slubbing is required to be of best fastness because of its use for the making of men's wear.

The dyestuffs are dissolved, for the production of the print pastes, in a small amount of boiling water; the solution is then boiled up with the thickening, and on cooling off sufficiently the whole is mixed with the other ingredients well dissolved, and stirred until cold.

When dissolving dyestuffs sensitive to copper it is well to add a little sulphocyanide of ammonia.

The print pastes used for Vigoureux printing must not be too thick, such thickening agents being given the preference as are easily removed from the fibre by washing. British gum, and more recently also sennar gum (Vigoureux gum), are extensively used for the purpose; beside these, tragacanth, dextrine and starch come mainly into consideration.

The fixing agents for Chrome Colours which have proved particularly useful are: chromium fluoride, formate of chrome, acetate of chrome, and Chromaline, but in certain cases yellow chromate of potash proves of good service.

Recipes for Print Pastes,
for Anthracene Chrome and Anthracene Acid Colours.

A) With Oxalate of Ammonia.

10—100	parts	dyestuff are dissolved in
590—500	,,	water and boiled up with
45	,,	sennar gum (Vigoureux gum) or a corresponding amount of some other thickening; when cold,
5— 50	,,	chromium fluoride,
30— 50	,,	oxalate of ammonia and
5	,,	chlorate of soda, dissolved in
315—250	,,	water, are added

approx. 1000 parts.

B) With Oxalic Acid.

10—100	parts	dyestuff are dissolved in
590—500	,,	water and boiled up with
45	,,	sennar gum (Vigoureux gum) or a corresponding amount of some other thickening; when cold,
5— 50	,,	chromium fluoride,
10— 30	,,	oxalic acid and
5	,,	chlorate of soda, dissolved in
335—270	,,	water, are added.
approx. 1000	parts.	

Instead of chromium fluoride, an equal amount of formate of chrome or of Chromaline, or 3 to 4 times the amount of acetate of chrome of 32° Tw., may be used.

When printing with Anthracene Chrome Black P extra, Anthracene Chrome Blue G, F, BB and R, Anthracene Chrome Violet B, Anthracene Blue Black BE or Vigoureux Green B, 3 parts sulphocyanide of ammonia per 1000 parts print paste should be added to the dyestuff on dissolving.

After printing, steam damp twice over for 1½ hours at a time at slight pressure (about ¼—½ atm.), then wash as usual, soap, dry, and comb.

An addition of about 10 parts Turkey-red oil per 1000 parts print paste facilitates the wetting of the slubbing and the penetration of the print paste.

Grey and Mode Shades.

Combinations of the under-mentioned dyestuffs are used, or stock solutions are prepared of Yellow, Red and Blue or Blue-black, and these are mixed in the proportion required.

Best suited combinations:

Anthracene Yellow BN
Anthracene Chrome Brown D
Vigoureux Red A
Anthracene Chrome Red A
Anthracene Chrome Blue G, F
Anthracene Blue Black C, BE
Vigoureux Green B
Anthracene Chromate Grey G

} Printing Method B or A.

Best suited for stock solutions:

Anthracene Yellow BN
Vigoureux Red A
Anthracene Blue Black C, BE

} Printing Method B or A.

For Greys, the print pastes for Blacks are frequently used, being printed with a small printing surface; for such purpose the following are particularly well suited:

Anthracene Chrome Black F — Printing Method A.

Anthracene Chrome Black P extra
Anthracene Chrome Black PPN extra
Vigoureux Black S

} Printing Method B or A.

Brown and Olive.

With best possible Fastness to Light and Milling:

Anthracene Chrome Brown D, DW, SWN — Printing Method B or A

Anthracene Chrome Brown DWN
Anthracene Chromate Brown EB, WS, WG — Printing Method A

and combinations of these dyestuffs with

Anthracene Yellow BN, RN, GG
Vigoureux Red A
Anthracene Chrome Red A
Anthracene Chrome Violet B
Anthracene Chrome Blue F, BB, G, R
Anthracene Blue Black C, BE
Alizarine Brilliant Green G, SE
Anthracene Chromate Green KFF extra
Vigoureux Green B
— Printing Method B or A.

Cheaper Method of Production:

Vigoureux Brown N, B, SW, V
shaded if necessary with

Anthracene Yellow BN, C
Anthracene Chrome Red G
Anthracene Chrome Black F
Tetra Cyanole A
— Printing Method A.

Red, Orange and Claret.

a) With best possible Fastness to Light and Milling:

Red:	Anthracene Chrome Red G Diamine Fast Red F	Printing Method A
	Vigoureux Red A Anthracene Chrome Red A	Printing Method B or A
Orange:	The same dyestuffs shaded with Anthracene Yellow BN, RN	Printing Method B or A
Claret:	Vigoureux Red A shaded with Anthracene Chrome Violet B	Printing Method B or A.

For particularly bright Shades:

Red:	Diamine Scarlet B, 3B	are printed according to Printing Method A or B, but without the use of a chrome salt and acid or of oxalate of ammonia, with the addition however of 5—20 parts phosphate of soda per 1000 parts print paste.
Orange:	The same dyestuffs shaded with Diamine Fast Yellow FF Diamine Yellow CP	
Claret:	Wool Red B	to be printed according to Printing Method A or B, either with or without chrome salts.

Yellow and Green.

With best possible Fastness to Light and Milling:

Yellow: Anthracene Yellow BN, RN, GG, C

Green: Vigoureux Green B
Alizarine Brilliant Green G, SE
Anthracene Chromate Green KFF extra
shaded if necessary with
Anthracene Yellow BN, GG
Anthracene Chrome Blue F, G
Anthracene Blue Black BE

} Printing Method B or A.

For particularly bright Prints:

Yellow: Milling Yellow O

Green: Alizarine Brilliant Green G
Tetra Cyanole A
Brilliant Milling Green B
shaded if necessary with
Milling Yellow O

} are printed according to Printing Method A or B either with or without chrome salts.

Blue and Violet.

With best possible Fastness to Light and Milling:

- Anthracene Chrome Blue F, BB, G, R, B
- Anthracene Chrome Blue RRW extra *, BW extra *
- Anthracene Acid Blue EB, ER
- Anthracene Chrome Violet B.

Printing Method B or A.

Cheaper Method of Production:

Combinations of

- Anthracene Chrome Black F

Printing Method A

or

- Anthracene Chrome Black P extra, PPN extra
- Vigoureux Black S
- Anthracene Blue Black BE

and

- Brilliant Milling Blue B
- Formyl Blue B
- Formyl Violet S4B

Printing Method B or A.

* Anthracene Chrome Blue RRW extra and BW extra are mixed to a paste with half their weight of ammonia liquor and then brought into solution by pouring hot water over them.

Black.

a) With best possible Fastness to Light and Milling:

Anthracene Chrome Black F, FE } Printing Method A

Anthracene Chrome Black PPN extra, P extra, 5B } Printing Method B or A.

Anthracene Chrome Black PPN extra is eminently fast to light.

b) With good Fastness to Milling and Light:

Anthracene Acid Black SR, Vigoureux Black S } Printing Method B.

c) For Goods to be cross-dyed:

Anthracene Chrome Black F } Printing Method A

Anthracene Chrome Black P extra, 5B } Printing Method B.

d) For Prints fast to Potting:

Anthracene Chrome Black P extra, PPN extra } Printing Method B.

The following dyestuffs are used for shading:

Anthracene Yellow BN, RN, Vigoureux Red A, Vigoureux Green B, Anthracene Chrome Blue F.

H. Dyestuffs for Hat Dyeing.

Dyeing Directions for Colours.

For ready-milled hats and for stiffened hats, the two-bath method is usually applied. Very good results may however also be obtained by the after-chroming method. The chromate process, in addition to its use in the dyeing of half-milled fur felt (shapes), has been found very serviceable for the dyeing of light weight fur felts which are stiffened after dyeing.

1. After-Chroming Method.

Charge the bath with
1— 3 % sulphuric acid (according to the depth of shade and the amount of acid contained in the goods) and
the dyestuff; or,
for thicker shapes and bodies, with
5—10 % Glauber's salt,
1— 3 % sulphuric acid and
the dyestuff.

Enter the well wetted or boiled felts at 40—50° C. (105—120 deg. F.), raise in ½ to ¾ hour to the boil, and boil for ½ to 1 hour. Hereafter cool the bath off to 60—70° C. (140—160 deg. F.), add the requisite amount of bichrome (about one-third the weight of the dyestuff, and in the case of shapes even for deep shades not more than 1,5 % of the weight of the goods), raise again to the boil, and finally boil for another half hour.

When dyeing felts containing acid with dyestuffs requiring acetic acid for starting the dyeing (see page 4), commence with the addition of 5—10 % Glauber's salt only, if necessary adding 1—2 % sulphuric acid after ½ hour's boiling. Felts which have been milled alkaline are dyed with the addition of 5—10 % Glauber's salt and 2—3 % acetic acid, 1—3 % sulphuric acid being added after ½ hour's boiling. The chroming in both cases is carried out as described above.

Felts containing much acid, for instance carbonised felts, before dyeing are to advantage neutralised in part by adding a little ammonia, borax or soda to the wetting liquor.

Ready-milled hat bodies (stumps) are turned inside out before entering the dyebath. They are turned round again

previous to the chroming and entered right side outwards into the chroming bath.

In the case of shapes (half-felted material) it is only necessary to turn when dyeing short-milled felt.

Regarding the subsequent shading and the dyeing in copper vessels see pages 8 and 4 respectively.

2. Dyeing on a Chrome Mordant.

Mordant the goods for 1 to 1½ hours at the boil with
2 —4 % bichrome and
1½—3 % tartar,
rinse, and dye in a fresh bath. Enter lukewarm, raise gradually to the boil, and boil for 1 to 1½ hours; for darker shades add subsequently about 3 % acetic acid in order to completely exhaust the bath. Instead of tartar, other assistants may likewise be used.

For particulars of the subsequent shading and the dyeing in copper vessels see pages 8 and 2 respectively.

3. Chromate Process.

Dissolve the dyestuffs in hot water, and add them to the dyebath; raise the bath to the boil, cool off, add the above-mentioned weight of bichrome, and enter the felts at 50—70° C. (120—160 deg. F.). Treat the goods at this temperature for 15 to 20 minutes, and after raising again to the boil, dye at the simmer for 1¼ to 1½ hours. In the case of pale and medium shades the bath is sufficiently well exhausted, but for deep shades it is advisable to gradually add 1—3 % acetic acid, well diluted, after an hour's boiling.

Acid-milled or carbonised felts before dyeing should be neutralised by boiling out, if necessary with the addition of a little borax or ammonia.

For particulars regarding subsequent shading see page 8.

Dyeing Directions for Black.

1. Hat Chrome Black, Anthracene Chrome Black and Anthracene Acid Black.

For soft hats, charge the dyebath with
5—15 % Glauber's salt crystals and the requisite dyestuff;
enter the wetted out or boiled shapes at 50—60° C. (120—140 deg. F.), raise in 20 to 30 minutes to the boil, and boil for ¾ to 1 hour until the hats are dyed through, then add in several portions, 3—4% sulphuric acid, well diluted, for wool hats and

4—6% for fur hats, boiling finally for another 20 minutes after adding the last portion of acid.

Hereafter chrome in a fresh liquor with the addition of

2—2½ % bichrome and
2 % hydrochloric acid

for 30 to 40 minutes at the simmer. It is not necessary to rinse the bodies before chroming.

In the case of soap-milled wool hat bodies, add

3—5 % acetic acid

to the dyebath in addition to 10 % Glauber's salt, and dye as decribed above.

When dyeing with Anthracene Chrome Black F or FE, or with combinations thereof, the bath should be corrected beforehand, according to the hardness of the water, with 5—10 oz oxalate of ammonia per 100 gallons liquor, and stirred well before adding the dyestuff, Glauber's salt and acid.

In the case of stiffened hats, commence dyeing straightaway at 70—80° C. (160—175 deg. F.), without any Glauber's salt, but with the addition of 1—2 % sulphuric acid, or 10 % bisulphate of soda, or again 5 % acetic acid; raise immediately to the boil, and after boiling gently for ½ hour add in two portions 2—4 % sulphuric acid well diluted with cold water. After ½ hour's boiling, chrome as already described.

2. Alphanol Black.

Charge the bath with 10 % Glauber's salt crystals and the requisite dyestuff; enter the wetted out or well boiled bodies at about 50° C. (120 deg. F.), raise to the boil, and boil for about 1¼ to 1½ hours until penetration is complete. In order to completely exhaust the bath, 2—4 % acetic acid or a little sulphuric acid may be added subsequently.

In the case of soap-milled wool bodies, commence dyeing with 10% Glauber's salt and 2—3% acetic acid, proceeding in other respects as described above.

In the case of men's wool hats which are subjected to severer steaming, it is recommended to after-treat without steam for 20 minutes with 3 % sulphate of copper after exhaustion of the bath in order to improve the fastness to steaming.

For stiffened hats, commence dyeing straightaway at 70—80° C. (160—175 deg. F.), with the addition of 5 % acetic acid or 1—1½ % sulphuric acid, and after boiling for ½ hour add 2—4 % sulphuric acid well diluted with cold water, dyeing then for another ½ hour at a gentle boil.

Dyestuffs for Grey, Mode and Brown Shades on Hat Felts.*

(Grey, Beige, Drab, Beaver, Nutria, Havana, Tobacco, Coffee, etc.)

1. After-Chroming Method:

For Wool and Fur Shapes:

Combinations of

Anthracene Yellow BN, RN
Anthracene Acid Brown G
Anthracene Chrome Red A
Anthracene Chrome Brown D, DWN
Anthracene Blue Black C
Anthracene Chrome Blue G
Anthracene Chromate Green KFF extra.

Cheaper combinations:

Anthracene Chrome Brown DWN
Anthracene Chrome Red A
Anthracene Yellow BN
and
Tetra Cyanole A for saddening.

For dyeing directions see page 118.

2. Chromed Wool:

For ready-milled soft and stiff Wool and Fur Hats:

Combinations of

Anthracene Yellow BN, RN
Anthracene Acid Brown G
Anthracene Chrome Red A
Anthracene Chrome Brown SWN
Anthracene Chromate Brown EB, WS, WG
Anthracene Chrome Blue G
Anthracene Blue Black C
Anthracene Chromate Green KFF extra.

For dyeing directions see page 119.

* The combinations which are dyed direct in an acid bath are indicated on page 118 of our "Manual of Dyeing", Vol. II (No. 2939).

3. Chromate Process:

For Fur Shapes and Hats which are stiffened after dyeing:

Combinations of

Anthracene Chromate Brown EB, ER, WS, [WG, 3G
Anthracene Chromate Yellow KL
Anthracene Chromate Red Y
Anthracene Chromate Grey G
Anthracene Blue Black C
Anthracene Chromate Blue XR, MGG
Anthracene Chromate Green KFF extra.

For dyeing directions see page 119.

For light Shades on Shapes or Settled Felts to be dyed in a milling or sizing machine, the following dyestuffs are used:

For light beige, drab, etc.:
The Anthracene Colours indicated under 1 and 3.

For light grey: Anthracene Blue Black C
Anthracene Chrome Blue G
shaded if necessary with
Formyl Violet S4B—10B
Brilliant Milling Blue B

} in combination with ochre, graphite or talc.

Dyestuffs for Red on Fezzes.*

See instructions on page 70.

* The combinations which are dyed direct in an acid bath are indicated on page 105 of our "Manual of Dyeing", Vol. II (No. 2939).

Dyestuffs for Green and Olive on Fur Felt.*

1. After-Chroming Method:

For Wool and Fur Shapes:

Combinations of

Anthracene Chrome Blue G
Anthracene Blue Black C
Anthracene Yellow BN, RN
Anthracene Acid Brown G
Anthracene Chrome Red A
Anthracene Chrome Brown D, DWN
Alizarine Brilliant Green G, SE
Anthracene Chromate Green KFF extra

brightened if necessary with

Tetra Cyanole A
Brilliant Milling Green B

Cheaper Combinations:

Tetra Cyanole A
Anthracene Yellow BN
Anthracene Chrome Red A
Anthracene Chrome Brown DWN.

For dyeing directions see page 118.

2. Chromed Wool:

For fully milled soft or stiffened Wool and Fur Hats:

Combinations of

Anthracene Chrome Blue G
Anthracene Blue Black C
Anthracene Yellow BN, RN
Anthracene Acid Brown G
Anthracene Chrome Red A
Anthracene Chrome Brown SWN
Anthracene Chromate Brown EB, WS, WG
Alizarine Brilliant Green G, SE
Anthracene Chromate Green KFF extra

shaded if necessary with

Tetra Cyanole A
Brilliant Milling Green B.
Cyanole Fast Green G.

For dyeing directions see page 119.

* The combinations which are dyed direct in an acid bath are indicated on page 120 of our "Manual of Dyeing", Vol. II (No. 2939).

3. Chromate Process:

For Fur Shapes and Hats which are stiffened after dyeing:

Combinations of

Anthracene Chromate Green KFF extra
Anthracene Blue Black C
Anthracene Chromate Grey G
Anthracene Chromate Blue XR
Anthracene Chromate Yellow KL, GG
Anthracene Chromate Brown EB, ER, WS, [WG, 3G
Alizarine Brilliant Green G, SE
Tetra Cyanole A
Brilliant Milling Green B.

For dyeing directions see page 119.

Dyestuffs for Blue and Violet on Hat Felt.*

1. After-Chroming Method:

For Wool and Fur Shapes:

Anthracene Acid Blue ER, EB
Anthracene Chrome Blue FR, BB, R
Anthracene Chrome Violet B

saddened if necessary with

Anthracene Blue Black C, BE

or brightened with

Brilliant Milling Blue B
Formyl Violet S4B—10B

For dyeing directions see page 118.

2. Chromed Wool:

For ready-milled soft or stiffened Wool and Fur Hats:

Anthracene Chrome Blue RRW extra, BW extra, G, R, BB
Anthracene Chrome Violet B.

For dyeing directions see page 119.

3. Chromate Process:

For Fur Shapes and Hats which are stiffened after dyeing:

Anthracene Chromate Blue XR
Anthracene Chromate Blue MGG

shaded with

Formyl Violet S4B—10B
Brilliant Milling Blue B, further
Anthracene Chrome Blue RRW extra.

For dyeing directions see page 119.

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* The combinations which are dyed direct in an acid bath are indicated on pages 123 and 124 of our "Manual of Dyeing", Vol. II (No. 2939).

Dyestuffs for Black Fur or Wool Hats stiffened, soft or to be stiffened and alkali-cleared. *

1. After-Chroming Method:

For Blue-Black:

Hat Chrome Black B
Anthracene Chrome Black 5B
Anthracene Acid Black DNG.

For Deep Black:

Hat Chrome Black BT
Anthracene Chrome Black F
Anthracene Acid Black ST, DSF, DSN, DSFB,

shaded if necessary with

Hat Chrome Black B
Anthracene Chrome Black 5B
or
Brilliant Milling Blue B
Brilliant Milling Green B
Tetra Cyanole A
Anthracene Acid Blue ER, EB
Anthracene Yellow BN.

For dyeing directions see page 119.

2. Dyed in an acid bath without after-chroming:

For cheaper Blacks produced in the simplest manner:

Alphanol Black BG, R, 3BN

shaded if necessary with

Alphanol Blue BR extra
Brilliant Milling Blue B
Brilliant Milling Green B
Naphtol Dark Green G.

For dyeing directions see page 120.

* The combinations which are dyed direct in an acid bath are indicated on pages 126 and 127 of our "Manual of Dyeing", Vol. II (No. 2939).

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